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Miscellanea vere Utilia :
 OR
 MISCELLANEOUS EXPERIMENTS
 AND
 OBSERVATIONS
 ON
 VARIOUS SUBJECTS.

IN THREE PARTS.

PART I.

Observations and Experiments upon ALIMENTS, in order to Health and longer Life; wherein divers Kinds of Foods daily in use that are repugnant to Health are mentioned; and TEAS and WINES particularly consider'd: Also other Eatables that are not work'd on by the Digestive Faculty, are pointed out.

With the best Ways of regulating Diet laid down; deliver'd in *Latin* Lectures to Students by the Author, in a plain and easily intelligible Manner; now made *English*.

PART II.

Observations on some Parts of the MATERIA MEDICA, whence will appear the present Mistakes about the same.

Also the Danger the Publick are under from Frauds in Medicines and Drugs.

Likewise a Search into the Nature of COLOURS, whereby to know which are those that destroy the Workmen; with some Thoughts on the deplorable State of other Artificers.

PART III.

Divers useful Discoveries that occur'd to the Author during many Years Researches in Chymistry.

By BOYLE GODFREY, *Chymist*, M. D.

Οὐ πλησμονή, ἔ λιμός, ἐδ' ἄλλα ἐδεν ἀσθὸν, οὔ, τι ἂν μᾶλλον
 τῆς φύσεως ἤ.

HIPPOCR.

Non fingendum, aut excogitandum, sed inveniendum quid Natura faciat aut ferat.

BACON.

The SECOND EDITION, with ADDITIONS.

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MISCELLANEOUS OBSERVATIONS
ON
VARIOUS SUBJECTS



THE BOSTON SOCIETY OF ANTIQUITIES

OF THE CITY OF BOSTON

THE SECOND EDITION



THE
PREFACE.

HE proper Ways of feeding our Bodies seem as little known to the Generality of Mankind as the Reasons for the Effects of the Magnet; at least we do not see Persons practise them: and indeed there is nothing more difficult than to persuade Persons to a Regard of any
A 2 Thing

The P R E F A C E.

Thing said on this Subject, so great is the Desire of gratifying the Itch of the Palate.

Many great Physicians have laid down admirable Rules for Regimen, all which seem to lie neglected; and indeed I cannot say I conceive great Hopes of rousing up Persons to an Attention to Matters of this kind by the few Things I shall deliver: However, I cannot be easy till I have attempted it, and will not yet give up all Hopes of Success.

As to Medicine, there are yet Abundance of Errors in the Chymical Pharmacy; the Ga-

The P R E F A C E.

Galenic is well handled by *Quincy*; and if that Gentleman had as well touched the first as the last, his *Dispensatory* had been invaluable; concerning which I have it in Design to write *ex Professo*.

As to the Processes in Part the Third, I believe he that puts them to the Test will find them Facts, or answer, which cannot be said of many Things under the Titles of Secrets, &c. such as are found in *Alexis Pedimontanus's* Art of Enameling, Colouring, &c. and *Lemery's* Curiosities, many of which contain nothing but Falsities and Impositions,
and

The P R E F A C E.

and the last of these just mentioned scarce more than barefac'd Lyes: for *Lemery* was not the Author of that Book, was a better Judge of things, but one *Emery*, who the better to impose put the *L'* to his Name; from none of which have I borrowed any thing. As Subjects relating to Health are desirable to be known to all, where any words are used that are *Latin* or *Greek* Derivatives, I have put the *English* thereto; as I have also those of Technical Terms.

T H E



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OBSER-



OBSERVATIONS

UPON

ALIMENTS,

In Order to

Health and Longer Life, &c.

PART I.



I Am confirmed in the Opinion, that our Bodies are design'd for an hundred Years, and that if we fall short of that Age, it is in great Part our own Faults, we erring either in
B the

the Quantity or Quality of the Aliments we make use of; (not that I would be understood to mean that we are not subject to Diseases, the nice Frame of the Animal Oeconomy certainly renders us obnoxious thereto) and much further than this Age Life cannot run, because Ossifications will not let us; that is, the Grand Channels of our Blood, the Arteries, as well as the other Parts serving to the vital Functions, will turn to Bones, whence the Machine stands still; and this happens the sooner, when the Person has been of a laborious Life.

1. I intend at present to mention those Vegetable Eatables, that I have found by Experiments and Observations not to be wrought on by the Stomach, and which are ejected in a crude undigested State, being useless to our Bodies; and others that are very hard of Digestion.

2. Those of the Animal Kind.
3. Those Eatables that are noxious or improper for our Bodies.
4. I would lay down some general Rules for Diet, for the Preservation of Health.

First, Of those Eatables that grow in the Earth, call'd

Vegetables.

MOST raw Herbs, as Sallets, &c. are of a Texture, or Make, that renders them scarce digestible; for the Stomach works very little upon them, they passing mostly in a crude State: But some Persons being told of this, make Answer, they are of a cooling Nature, they forgetting that many of them are just of a reverse kind; For Parsly, Sage, Mint, Cresses, Chervil, Radishes, Horse-raddishes, and Onions, are of a very hot Nature; the three

first abounding with an Æthereal Chymical Oyl; the others with a volatile active Salt, which in Plethoric Habits, or a too great Fulness of Blood, are very pernicious.

Mushrooms.

THESE are wholly indigestible, and a Person may as well eat *Buff*, or *Cork*; besides, some of them are of a poisonous Nature, as myself have seen in some People.

Potatoes.

THESE when roasted are very hard of Digestion, and when boil'd are one of the strongest of all Vegetables; however, if well boil'd, may serve for Food to People who use Exercise.

*TRUFFLES are not digested.
Pickled*

Pickled Cucumers, French Beans and other Pickles,

ARE very little work'd on by the Stomach, besides the Acid or Sourness they carry into the Habit: I have caused a Man to take an Emetic four Hours after eating them, and when they were thrown up, I found them as the Teeth left them.

Raddishes.

THESE are of a very crude Nature, and not digested; besides their Heat, which makes them noxious; for they greatly heat the Blood.

Small Nuts, Wallnuts, and (above all) Chesnuts.

THESE are very improper to be eaten, being very crude,
and

and which occasion a Pain in the Stomach, &c.

Unripe Fruits in general.

THESE are likewise extremely crude, and indigestible, and introduce Mischiefs by their Acrimony, or Sourness; they bring on the Diarrhœa's and Dysenteries (Flux and Bloody Flux) heard of at the Season when Fruits are in this State, which they effect by the essential Salt inherent to the Juice stimulating the Intestines: This Acrimony appears by the Blackness on a Knife when unripe Fruits are cut, which shews that Part of the Steel is dissolv'd. I knew a Youth who dy'd by eating what they call Gooseberry-Fool; and others flung into violent Cholics. Most Fruits that are ripe may be eaten very safely; The most innocent of all are Strawberries; but Currants suit few Persons, because
of

of their Sourness; for Acids agree with few People; the Physician knows best when to order them: This Sourness People think to take off by Sugar, which is a grand Error; for Sugar is an Acid *ex Prædominio* itself; being made up chiefly of such Parts, and committed to Distillation gives a Spirit not unlike Vinegar; it only hides the Sourness from the Taste, and deceives the Palate.

The Fruits that must be eaten with Care above all others, are these, *viz. Grapes, Mulberries, Figs, and Melons*; for these used too freely, bring on frequently a Looseness, like Manna; for the Sweetness in them is a Kind of Manna, and differing very little from it: *Melons* are of a cold Nature, which often stop natural Perspiration, which is, otherwise speaking, a Surfeit. This also happens from Cucumers to some Habits,

Habits, in which they also bring on a Looseness.

Cherries,

ARE a good Fruit; and a learned Professor of *Holland* said in one of his Colleges while I was at *Leyden*, that their Juice is very good against a Schirrus of the Liver; but it is a great Error to swallow their Stones, and set so fine a Part as the Stomach to grind on such hard, and often pointed Things. These may be abused; for a Gentleman, at present a Surgeon to one of the Regiments of Guards, told me he knew a Man who did eat five Pounds, by which he was made very ill, whom he relieved by large Doses of Spirit of Harts-horn; which Spirit containing a volatile Alcaline Salt, I suppose, engag'd the stimulating acid Juice of the Fruit. The late ingenious Surgeon of *Chelsea* Hospi-

Hospital acquainted me with an odd Accident that happen'd from Cherries, *viz.* that Part of the Skin of one stuck so close to the Coats of the Stomach of a Person who eat them, that the Man almost strain'd to Death in vomiting, before it was clear'd from the Part it adher'd to.

The next in Order are Eatables of the Animal Kind; as Flesh, Fowl, and Fish.

Eggs boil'd hard.

THE Whites of these are wholly indigestible, and some of the worst Things we suffer to enter our Stomachs; they occasion Cholicks: Let a Man eat the White of one hard Egg every Day, it's more than probable he shall not live a Year. The Assertion of some, that Black Raddishes resolve hard Eggs, is a Falsity. Eggs when soft boil'd

C

are

are one of the strongest Foods we use: People vastly err, who imagine them a light Meal for a Person not well: which, however, may be eaten at Dinner if soft boil'd: The worst Way we use them, is mixing them with Ale, or other strong Liquors; I have known that done, when the Egg that was put into the Ale ran together again, which making the Stomach uneasy, an Emetic was exhibited, and the Person near Death's Door in getting rid of it.

Cheese toasted,

BEcomes like Leather, and indigestible; it were to be wish'd Cheese were used more sparingly; for the Saying, *Caseus est bonus, quem dat Manus avara*, is true. The Cheshire is corrosive, for it will excoriate the Mouth, &c.

The TAIL of a LOBSTER is extremely hard of Digestion.

Oysters

Oysters

DONE in the Shell on the Fire are render'd indigestible, and a Man may as well eat *Buff* as them; otherwise dress'd, they are very good.

Udder of the Cow,

IS hard of Digestion; which Part is very often unsound, it being subject to Ailments like the Breasts of Women.

Gizzards are untouch'd by the Stomach.

Kidneys, and the *Heart* (which is a Muscle) are very hard of Digestion. So are the *Lungs*, and the lesser End of a dry'd Tongue hardly work'd on; likewise tough Meats.

Speaking here of the digestive Faculty, it may not be amiss to take Notice of that of voracious Creatures, as Dogs, Wolves, Tygers, Panthers, Bears, Monkeys, Baboons, and Lions, the Stomachs of none of which alter hard Bones, which are found in the same State in the *Stercus* or Dung, as the Teeth left them in. How fabulous then must be the Assertion of the Ostrich's digesting Iron, notwithstanding the Power of his Gizzard to grind. I making the Experiment of the Laurel-Water on the Life of Animals, and killing a Dog thereby in the Presence of some Physicians and Virtuoso's, one of the Physicians bade a Surgeon present cut open the Creature, when we found a Cartilage or Gristle in the Ventricle or Stomach, which the Owner of the Dog remember'd to have been given him some Hours before, which was unalter'd, or unwork'd

work'd on, which is much less hard than a Bone.

Opening a Number of Vipers, I found in the Intestines of two of them a Mouse, which Mice were passing unalter'd, and which could not be digested because of their Skin. It is strange that any Person acquainted with the Animal Oeconomy should expect the harder Substances should be digested by the Stomach, (which is not a Millstone) when we know that Digestion is little more than Trituration, Maceration, and Expansion, of the Aliments, by warm, aqueous, or watery Liquors; for to imagine a Fermentation is a Dream; for no Vegetable Fermentation, nor Animal Putrefaction, can be effected in four or five Hours, which is the Time the Aliments are allowed to stay in the Stomach to make a Chyle, before they mount the *Pylorus*, or lower Orifice of the Stomach in order to enter the Intestines,

testines, or Guts, to be ejected; of which Thoughts speaking to a Gentleman, he objected that I did not consider the further Work in the Intestines; and that as the Aliments often remain in them forty Hours, or longer, they might rot or putrefy there: To which I answer, I believe the Intestines, by their Peristaltic Motion, may squeeze and assist in getting the Chyle ready for the Lacteals; but if the Vegetable Aliments rot, or the Animal ones putrefy, I assure myself that what Chyle they should give for the Use of the Blood, would be very improper for it; for it would be an *aliud quid*, a *tertium quid*, (*Corruptio unius est Generatio alterius*) and may be noxious, or poisonous, as we know dead Animals in the State of Putrefaction are. I cannot suppose that a Vegetable ferments in the Body, as it does in the Distiller's Vessel, when he is about the Work
of

of making an ardent Spirit; for I should think that would be hinder'd both by the spirituous Liquors we take in, and the Marine Salt: for I have observ'd, that if a little vinous Spirit be flung into the fermenting Matter, or some Salt, the Operator works in vain. It is a Question likewise, whether the volatile Animal Salt in us would not also obstruct it, which it may easily meet with, our Secretions abounding therewith, especially the *Saliva* we incessantly swallow; which Salt I have by a certain Process sublimed from the Shirts of sweating Men by a Water-heat, which cannot be done from the other Parts of our Bodies in a natural State without an arid Heat. It is possible Aliments may stay a longer Time in the Stomach; for an Example has been known, that a Man having eaten Grapes, and having an Ague, an Emetic was exhibited for the beginning

ginning the Cure twenty-four Hours afterwards, when the Grapes were cast up no ways corrupted nor putrefy'd. The same has been observ'd of a Person that had eaten Cherries.

I would now mention a few Things that we ought to be cautious in the Use of, *viz.*

Salt.

IT is pity we are, as it were, necessitated to use Salt; for this Ingredient is but a bad Guest in the Animal Oeconomy; and those at Sea wofully experience it; for they are full of the Gravel: We never take any into our Bodies without its leaving a Part behind; for it is partly indissoluble to our Fluids, or the Humane *Latex*, which contains a good deal of Substance, or Matter itself, and which on an Analysis or Chymical Examination gives the same Principles or Substances as other Animal

nal Substances do, and thence is less fit to dissolve Salt, which chiefly remains in the Kidneys: This Inaptitude of the Salt to be dissolv'd proceeds from the close Combination of its Acid with its own Earth, which is not so in Sugar, which is very innocent. There are indeed some Gentlemen who think Salt necessary to stimulate the Intestines, for the Protrusion or Expulsion of the Excrements; but I believe Nature has provided for that Work without it; which is evident from the Observation on the Soldier wounded in the Gall-Bladder. *Philosoph. Transact.* N^o. 414.

Vinegar.

THIS in the Hand of a Physician may be of Service, but is what Persons ought not to make too free with; for Acids or Sours disagree with most People; they introduce

introduce a Lensor and Coagulum into the Blood, and spoil its free Circulation; they occasion Cholicks, by stimulating the Intestines or Guts, the Seat of that Illness.

Oil.

THIS also is of Use in the Physician's Hand, but not to be play'd with; it palls the Stomach, and takes away the natural Appetite.

Mustard.

THIS is of Use in Medicine, but very improper to be made free with in Victuals; for it contains a volatile pungent Salt, which is Fire to our Nature, heats the Blood, and increases its Motion to a great Degree: And of this Kind is Horseradish, very improper for most Habits, but of Use in Medicine.

Spices.

Spices.

THESE have their Use in Medicine, but are bad Ingredients to make free withal; they contain a fiery active æthereal Oil, which greatly heats the Blood, and which does much Mischief in sanguine or Plethoric Constitutions, or where a Person is full of Blood: This Oil is much the same within us as strong intoxicating Liquors.

Onions,

AS said before, are very heating, but well boil'd, as is the Custom with Rabbits, their active volatile Salt is driven away, and they become mild and innocent.

Cream.

THIS is in such a concentrated or contracted State, as to be

very improper to use freely; it is one of the too-good Foods; Nature likes plain and simple Things: It may possibly be of Use to a consumptive Person, who needs the Nutriment that would be too much for another Man.

Gravy, as 'tis call'd.

A Little of this just to touch the Meat in, by Way of Sauce, can do no Harm, especially to those who drink at Meals small diluting Liquors; but it is very improper to be supp'd freely, as some do, or to be used in Broth, &c. for it will subject the Users to Fevers, and is bad for those of a Scorbutick Habit; it is concentrated Blood, the more watery or serous Part being exhal'd by the Fire, the Remainder is driven into a less Compass, which is too much for Nature.

Seville

Seville Oranges.

IF we go by the Guide of Taste only, these seem agreeable; but the Question is not what we like, but what likes us? They are of Use in the Physician's Hand, but noxious to use frequently: The self-same may be said of Lemons, or worse.

Olives Pickled.

THESE are extreamly improper for Use, they being full of an Oil that palls the Stomach, and besides contain a pungent Salt, which occasions the Sensation call'd the Heart-burn; that is, an Inflammation of the Mouth of the Stomach.

Dry'd

Dry'd Currants and Raisins.

THESE occasion Cholics, and purge People, especially the first; for the Saccharine or Sugar-like Taste proceeds from a Salt that is in them not unlike Manna.

There are some of the Kinds of Fish that disagree with some Persons, which being commonly known, it's needless to name them: If Oysters ever purge (as they will some) it is not from themselves, but the Sea-Salt in the Liquor that is with them; they are admirable Food. *Sanctorius*, indeed, says, Oysters hinder Perspiration; they are bad in a Plethora, or where the Blood too much abounds; they are apt to run into Corruption, and Fermentation: but though I admire many of his Statical Experiments, I shall venture on these Fish either raw or gently stew'd.

stew'd. I speak of purging, because it is a harder Tryal upon the Animal Oeconomy than Persons imagine, and a Work not to be done but by the Physician's Order.

And now of some other Things that Luxury has led Men into, *viz.*

Tobacco.

I Must own I wonder more at the Use of this than all other Things; for Nature startles at first at it; it occasions a violent Sickneſs and Vomiting; it contains a ſœtid Oil that is next to poiſonous: I have known very ill Effects from chewing it; and am ſure a Man is better without the Use of it any Way. *Ramaz-zini* ſays it occasions the Piles, renders the Lungs dry, and by robbing us of too much Saliva brings on Conſumptions.

And next the favourite Luxury,

Teas.

Teas.

I Am for considering Teas, likewise Coffee and Chocolate, in a natural State, and without analysing or taking them to pieces; for upon doing that, we find Principles or Substances that do not affect us before they are separated by Art: for Example upon a chymical Examination of Tea, Coffee, or Chocolate, we obtain a sharp Vinegar-like Spirit, &c. which in a natural State is latent or unperceiv'd, and, as said above, don't affect us as such. Thus Bread, doubtless, is good for all; but if we take it to pieces by a chymical Process, we get an hot Oil, and a sharp acid Spirit, neither of which, perhaps, would agree with us; therefore, I say, I shall not trouble my Reader with the Principles or latent component Parts of them.

The

The Green and Bohea, I agree with others to be one Species of Herbs, the latter of which is now adulterated, and chiefly by a Solution of Japan-Earth, and sometimes by a worse Way: This Herb has in it a very pungent and even corrosive essential Salt; but as to a fixt lixivial one, as a late Writer asserts, it is a Mistake; for there is no fixt Salt præ-existent to Calcination, such Salts are made during Calcination, by the Acid of the Vegetable preying on its own *Terra*, or Earth, and thereby forming a Salt; and which Salt being kept in the Glafs-house Fire, the Acid is driven off, and you have the *Terra*: We may also take away this acid Part by a certain Process with Sulphur. If strong Tea be held in the Mouth, a diligent Observer will perceive an Uneasiness; for it begins to stimulate the Membrane or Skin of the Mouth, &c.

E

Strong

Strong Tea will corrode or gnaw Flesh; it will also corrode Iron: *Kæmpfer*, in his Appendix to the History of *Japan*, says that it has a strong Narcotic Quality, (that is, of the Nature of Opium) and that it is unwholesome till kept a Year.

We know Examples of People who were great Drinkers of strong Tea, who died thereby, and who being opened, their Stomachs were found ulcerated; I am confirm'd by Observations and Experiments, that a too free Use of Tea made strong is very pernicious; its essential Salt spoils the Texture of the nervous Fluid, call'd the Animal Spirits: it coagulates the Blood, and impedes its free Circulation: It is an Error to think it raises our Spirits; it is only the Effects of the hot Water; hot Water and Straw will do the same, which holds but a little while, and then the Drinker almost trembles. Our own Country produces

produces about eighteen hundred *Simples*, out of which we may pick very pretty Teas, without failing to *Turky*, the *East* and the *West Indies* for a Breakfast, as we do for this Herb, Coffee, and Chocolate, for the first of which we send Coin: Those who are resolv'd to use it, let them make it small, and add thereto some Milk, which by its butyrous Part takes off, in some measure, its sting; but they will do much better to use instead thereof an Infusion of Ground-Ivy, Baum, Sage, or Coltsfoot. I am of Opinion that most of the modern nervous Illnesses, and Lowness of Spirits arise from the Abuse of Tea, and the Use of those deadly Doses, Drams; and in which I have the concurring Sentiments of several of our learned Physicians.

Coffee.

A Dish of this not made strong can do no great Harm; but

I am satisfy'd, that strong Coffee must be noxious; for its innate fœtid Oil is rarify'd and push'd towards the surface by the Act of roasting, whereby it becomes like an *Oleum Philosophorum* (as 'tis call'd) or Oil of Bricks, very pungent and active, which renders the Decoction of Coffee almost capable of convulsing the Stomach: This hot Oil must surely be bad for Persons of a Plethoric Habit, or that abound with Blood.

Chocolate.

THIS is a very strong Ingredient, and very hard of Digestion; its Oil must in Time pall the Appetite: It seems indeed to give an Appetite, but it is not a true and natural one, but occasion'd by its stimulating as it goes over the *Pylorus*, or lower Orifice of the Stomach;

Stomach: It is certainly too strong for us if made thick.

The Things I have yet to mention that ought to be cautiously used or avoided, are spirituous or strong Liquors, touching which Persons err more than in all Things else in the World; I say, I know of nothing that the Generality are under so great a Mistake about as strong Liquors; and there is no convincing them of the Rock that they are about to split upon: They are accounted our Comforts, our Support and Strength; whereas they are our Bane and Destruction, and introduce every Thing into the Animal Oeconomy destructive of its Functions. There is a latent Acid in ardent or burning Spirits, besides the fiery Part, which is the merry-making or intoxicating Quality in all strong Liquors, and which is a bitter Enemy to the Springs of Life:

This

This Acid is evident from the following Experiments, *viz.* Put an Ounce of Spirit of Wine into a Quart of pure Water, shake it, set it by for a few Days, you have a sour Liquor or Vinegar.

2dly, Let a Piece of Lead be laid in Spirit of Wine, which after some Time will have its Surface eaten or corroded, and a Ceruss or white Lead will be form'd: Which Power of corroding comes from the acid Salt, one of the component Parts of the said Spirit. Strong Liquors of all Kinds hinder Digestion, they being just of a reverse Nature to what is necessary to it: They introduce a Lentor and Coagulum into the Blood, and impede or spoil its due Circulation: They subject the Drinkers to Cholics; and beget Polypusses: Many are the Mischiefs that might be enumerated, that are brought on by the Use of vinous Liquors; insomuch that I am sorry
Nature

Nature has suffer'd such a Change to be brought about in Vegetables, as their Phlogistic Part to turn to a vinous Spirit by Fermentation.

Touching the different Kinds in Use we would likewise say somewhat, *viz.*

Those held highest in Esteem are the *French* Wines, which in Truth is the Curse of that fine Country; for all of them (except that call'd Muscat, or Muscadine) and especially the *Burgundy*, are their Bane, and the Bane of many here; for they abound with a cruel Tartar indissoluble to our Fluids, from their Acid being closely combin'd with their own *Terra* or Earth, which Tartar subjects the People of the Country to the Gout, Vertigo's, all the Kinds of Hæmorrhages or Effusions of Blood, the Gravel and Stone: Of the Nature of those Wines also are the *Rbenish* and *Galicia*, and to be

be avoided alike. If a Man is firmly resolv'd to go on in the Use of Wine, let him use *Red Port*; of many Evils he then chuses the least: but as it is near as strong again as some of the *French*, less must be drank; and I advise him to drink Water with it, before it, or after it; for much less Mischief will arise this Way, than by letting it be in the Stomach alone: Oil of Vitriol is a good Medicine diluted by Water; but Death alone: Spirit of Harts-horn is excellent in Water; but likewise Death alone, which I have known happen; as I have also from that mild and useful Medicine *Sal Volatile Oleosum*. Sack is one of the strongest of all Wines, thirty two Ounces of which contain upwards of three Ounces of an ardent or inflammable Spirit: *Rhenish* and some of the *French* are the weakest in Spirit. I wish there were no Adulterations in Wine here!

here! Some time since a Man was beheaded in *Switzerland* for using Arsenic and White Lead to clarify Wines.

Malt Liquors.

FRESH Small Beer is a good Drink for most People; but the Strong Beers and Ales are very destructive to Health; nothing occasioning a Dropsy sooner: The most innocent of all strong Liquors is common Ale of Alehouses.

Punch.

THIS is the worst Composition or Liquor we make; it is prodigiously destructive to Health in many Respects; that with Lemons is worse than that with Oranges; somewhat of the Nature of this is Cyder, especially the sharp Kind.

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Drams.

Drams.

I Cannot mention these Doses without Pain ; they are the most deadly of all Liquors, and which continue in use, notwithstanding the late Prohibition: Drams are near as sure Death as a Sword, tho' a little slower about the Work. The most dangerous is that call'd Usquebaugh, which if made by the finest Receipt, is loaded with Saffron, besides other hot Ingredients ; which Saffron in the Hands of a Physician is of great Use in Medicine ; but if used too freely, is a Fire ; for it will raise Blisters and corrode ; and I know a Preparation of it stronger than any of the burning Caustics Surgeons use, and more violent to the Flesh than boiling Oil. Brandy and Rum are the most hurtful in respect of the great Quantity of ardent Spirit they contain, and compound Drams in respect of the
hot

hot æthereal Oils they receive from the Ingredients they are composed of. In a Gallon of Brandy there is about two Quarts and a Pint of Spirit; in five Quarts of a made Dram, there is but two Quarts of Spirit. Geneva so much esteem'd by the Vulgar, is indeed a vulgar Compound, being the Product of 30 Gallons of Water, and ten Gallons of Spirit, such as we burn in Lamps, with a Quart of Oil of Turpentine distilled together. It is an Error to think the *Hollanders* can make this Liquor better than we; theirs generally being done of *French* Brandy which they have cheaper, and we using common Malt Spirits, occasions the Difference; but give the *English* Operator Brandy, and he will outdo the *Dutchman*; for Distillation or the Manner of Compounding is much better known here than abroad.

This I have observ'd touching strong Liquors, *viz.* that if a Man drinks any determinate Quantity of Wine, and at another Time Brandy diluted by Water, so as to have an equal Quantity of ardent Spirit and watery Parts in each, he shall find more Inconvenience from the Brandy and Water, than the Wine; for the Brandy and Water cause the Cholic and a Pain in the Stomach, and affect the Head, which we may suppose to proceed from this Reason, that the Brandy having been rarify'd and rais'd in Distillation (which Wine has not) it's Spirit or Parts are in a more active pungent state, and fitter to bring about the uneasiness complained of. Our ordinary Sort of People are more addicted to Drums than any People in the World. Drums in *France* (except Brandy, which they are not fond of) are sold dear, so that they come but little among them; and
in

in *Holland* and *Flanders* it is not so common to see People drunk. *Touchmanus* the Poet indeed accuses the *Germans* his Countrymen of Drunkenness, by saying,

*Germani possunt cunctos tolerare labores,
O utinam possent tam bene ferre sitim!*

But I'll answer for our People's outdoing them, than which they can do nothing more conducive to cutting the Strings of Life.

I dare say my Readers will be ready to ask, what Things may be used for Food, since so many have been prohibited, and that they will think, *Medicè vivere, est miserè vivere*; but Things being taken right, I believe it will be found, *felicissimè vivere*; for after the improper Things for Aliments are subtracted, there will be found a sufficient Number remaining both to nourish and to please. Touching the Ways of Eating and Drinking, not only *Hippocrates*, &c.
and

and others of the Ancients have left us very good Directions, but the late worthy Dr. *Arbutnot*, and that very eminent Physician of the *Bath* Dr. *Cheyne* have wrote admirably thereon, whose Works I could wish to be in every one's Hands.

All plain Meats then simply dress'd, no doubt, are generally good Foods, but the boil'd is much more easy of Digestion than roasted, whence better for weak Digestions: Of all Meats, Mutton is easiest of Digestion. All Fowls likewise, tho' some of them are of a stronger Nature than others, which are generally known.

FISH likewise are proper Nourishment, except the few that are known to disagree with Persons, as Sprats and Herrings: There are some indeed poisonous in the *West-Indies*, *Vide* Sir *Hans Sloane's* Natural History of *Jamaica*;

Jamaica; Catesby's History of Carolina, &c.

Vegetables, if boil'd, are very good, such as Beans, Pease, Parsnips, and the Herbs usually in Use; the most innocent of all are Turnips; but a Man needs to eat a good deal of them, they being full of a Juice amounting to little more than Water; for if twelve Pounds of them be laid in the Air, eleven Pounds will be carried off thereby; and that which is capable of going off so, I believe would afford no Nutriment to us, if taken into the Stomach.

Millet and *Rice* are very good, the last of which should be well boil'd, if the Eater of it is subject to be loose. Milk is very good for Persons who drink small Liquors, but with those who drink strong it does not so well; because the Acrimony in those Liquors forms a Coagulum or Curd, whence

whence Inconveniencies arise: A Man in *St. Martin's* Workhouse did eat Milk, and after it drank strong stale Beer, after which he vomited a curdled Matter as long and as big as the biggest of a Man's Fingers.

I am speaking here of what Persons in Health may eat; when they are ill, Physicians know best how to direct a Regimen. Touching the Quantity to be eaten, I am not for directing Weight or Measure; some People must have more than others, especially the working Sort, or who use much Exercise: In the Morning a few thin Slices of Bread and Butter, or a little of the Things made at the Pastry-Cook's, without Almonds or hot Seeds may be eaten, and a little Gruel, Whey, Barley-Water, Sage Tea not made strong, Baum or Ground-Ivy Tea may be drunk; but if the other Teas must be had, to use them small, adding thereto Milk.

At

At Dinner let plain Things be eaten, and let them be dressed rather by a Cook of six Pounds a Year than sixty: Also be it a standing Rule to rise with Room for a little more, and not to fill the Stomach too full; for then it cannot do its Office of Digestion so well, and when pressing on the Diaphragma, it hinders the Play of our Lungs, and we are made uneasy in our Breath.

At Supper very little serves, any little Thing from the Pastry-Cook's, not having in it Meat or any Thing of the Animal Kind, does well; but the less the better: I am sure we shall live the easier, and the longer by this Rule.

Persons err prodigiously in their Notions about Foods; they imagine it's impossible to have too much of so necessary a Thing as Victuals. The Desire of pleasing the Palate in us is very strong; we dig our Graves with our Teeth: That which should pre-
G
serve

serve Life to us, bereaves us of it;
Strange Error!

It is an Error to quit Meat, and to take to Vegetables altogether, except in Case of the Gout, &c. for Meat or Animal Foods are necessary once a Day for most People, at least in the colder Climates; for upon an Analysis or Examination of Meat, and the Substance of Human Bodies, they are found to consist of the same Principles or component Parts, and are therefore proper for us.

Lastly, OUR DRINKS.

I am steadfast in the Opinion, that Water, and watery Liquors are the Liquors of Life: By watery Liquors I mean (which are all proper Drinks) Barley-Water, Gruel, Whey, Milk and Water, fresh small Beer, Milk-Water, &c. Water is the Liquor of the Universe; it's the Life of Animals and Plants, and should be of Men; and the only true Digester:
All

All sublunary Things are Water and Earth; we are so our selves. It is a great Error to imagine Strong Liquors support and comfort us; the Comfort is false, and but for a Time, and leaves a Poison behind: however, I would not rob those of them on a sudden, who have been accus-tom'd thereto; yet desire them to believe, that the less they drink, the less Pain they will feel in Life; and the longer Life itself will be. This is my Opinion, and by these Rules I shall steer my Course; however, I am resolv'd to enter into no Controversy about the same.

P. S. Speaking here of Health, I would add one more Caution, tho' of a different Kind, *viz.* Not to suffer Children to be swung in a Swing by the Neck to make it longer, as is the present Custom; for I have known Mischief ensue

from it twice, when one Child got a Tumor on the Chest, and another fell into strong Twitchings as if convulsed.



OBSER-



OBSERVATIONS
AND
EXPERIMENTS

On some Parts of the

Materia Medica, &c.

Whence will appear the present
Mistakes about the Same.

PART II.

DEsigning to write at large
on the *Materia Medica*, I
thought to defer mention-
ing the Subjects herein
spoken of till I could produce that
Work;

Work; but as I know not when I may bring it forth, and as some Things are highly necessary to be known, lest Inconveniencies should arise for Want of such Knowledge, I resolv'd to print them first in this Miscellaneous Way.

EXPERIMENT I.

Bole-armeniack is held to be an Alkali or Absorbent, and trusted to as such in Practice; which is a great Error, it being no such Thing; for being try'd with all the Species of Acids, it lies quiet, making no Effervescency therewith. If acid Spirits be poured on *Bole*, they are drawn off again, having the same *Vis* or Strength as when they went on, which cannot be done from true Alkali's. This Substance or Part of the *Materia Medica* is so far from being an Alkali, that if push'd with a strong Heat in Distillation, it gives an acid Spirit; for it contains an

Acidum

Acidum Vitriolicum. Most of the *Bole* found in the Shops is only Pipe-Clay and Red Oaker ground up together.

EXPER. II.

Terra Sigillata, and *Lemnia* are also accounted Alkali's, but are not so, which is evident from the same Experiments of trying with Acids, &c. as with the *Bole*: Most of these in the Shops of the *Falsarii* are Pipe-Clay and Oaker likewise.

EXPER. III.

Saffron, in the Hands of a Physician, is, doubtless, of great Use; but dangerous to be play'd with: it contains a very active pungent or corrosive essential Salt. I know a Person who made a Mixture of Saffron and Spirit of *Rosemary*, which he apply'd to the *Abdomen* of a Child, and the Part was greatly inflam'd and excoriated; and worse would have ensued,

fued, had not Means been used. If after the Tincture of Saffron be made, the *Magma* or Pressings be apply'd to the Skin of a Person, Blisters will readily be raised; and *Johannes Weidenfeldius's* Spirit of Wine will make an Extract of Saffron one of the most violent Caustics in the World. A learned Physician inform'd me that a Man stole a Pound of Saffron in a Paper, which he hid in his Bosom next his Skin, soon after which he fell into a Vertigo, Apoplexy, and died. Other Authors likewise speak of the violent Effects of this Flower.

EXPER. V.

Calcined Harts-born: There is nothing in the *Materia Medica* that Persons err more in than this Ingredient: It is monstrous that any Writer, at all vers'd in Chymical Enquiries, should dream that it is an Alkali or Absorbent; for on Trial it will

will be found to be no such Thing ; and indeed, without Trial a Man should know that ; for by Calcination the Volatile Salt, Phlegm, Spirit and foetid Oil are all driven away, when there remains only a dead Earth ; for, I hope, no body will assert the Existence of a fixt Salt in Animal Bodies. Some indeed have said they have found a fixt Salt in Blood after Combustion, which if they did, it must be in Human Blood, and proceed from the Marine Salt taken in with the Aliments ; for Sea-Salt is a *Salsum*, partly alcalious, and partly acid, which Acid being driven off by Fire, an alcalious Earth remains. But to return to the Hart's-horn, which I say is no Alkali, nor of any Use in Medicine ; it is one of the Ingredients of the good Wives favourite Gascoin's Powder, and continues in Families to be the Basis of a white Drink trusted to in a Diarrhœa and

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Dyfen-

Dysentery, in which I'm sure it is of no Use : and I wish I could not say worse Things of it ; for suspecting this substance, Oyſter-shells, Egg-shells, Coral and the like calcinated Things to be a Kind of Lime, I consulted Dr. *Groſs* a German Phyſician at *Paris*, and one of the first Chymicus's in *Europe*, who confirmed me in my Opinion, acquainting me that he had known Burnt Hart's-horn given for some time to the Quantity of a Dram for a Dose, and the Taker of it died thereby. It is true we often see the white Drink used without any Harm, because it is order'd by the Receipt to be strained or the Hart's-horn is suffer'd to subside, whence little goes down into the Stomach ; for the boiling dissolves none of it. In my Conferences with the first Professor of the University of *Doway* while there, I found this Ingredient not in Esteem in *Flanders*.

EXPER.

EXPER. V.

Distill'd Milk is thought by many to be no more than common Water, and therefore us'd by few in making the Milk-water; but that is an Error, for Distill'd Milk will make a small Precipitation in a diluted Solution of Mercury, which pure Water will not do, which shews that it contains some volatile animal Salt.

Again, let Distill'd Milk be kept nine or ten Months, it putrifies, and a slimy Matter falls to the Bottom of the containing Vessel, which being catch'd by a Filter, and dry'd, then put upon a red-hot Iron, it burns, glows, and evidently shews a Phlogiston or inflammable Part, exhibiting the Appearances of an *Animale quid* so treated.

EXPER. VI.

Plantain, Celandine, Eyebright,
and the like cold simple distill'd
H 2 Waters

Waters are thought by many to be no better than elementary Water; but if kept an Year, or less, they putrify, letting fall a *Mucus*, which if separated by the Filter, dry'd, and laid on a hot Iron, as in the last Experiment, it exhibits the Appearances of a Vegetable when burning, which shews those Waters are not so simple as conjectur'd to be.

EXPER. VII,

Cochineal: This is now pretty generally known to be an Animal, or Kind of Lady-bird; but it is Matter of Wonder any heretofore should doubt of it, or contend for its being a Berry, &c. for do but put it into a coated Glass Retort, and surround it by Fire, you will have the same Spirit, as Spirit of *Harts-horn*, a Phlegm, Salt, and fœtid Oil, and remaining an Earth without Salt, which ends the Dispute.

EXPER.

EXPER. VIII.

Juice of Lemons is distill'd with the other Ingredients to prepare the *Treacle-Water*, in order to have an Acid to excite Sweat, which is a great Error; for neither this Juice, nor that of *Verjuice*, nor *Seville-Oranges* come up sour in Distillation, neither in the cold Still, nor in *Balneo*, where it comes to a boiling State; and for this reason, viz. That they have not yet undergone the last Vegetable Putrefaction, which Vinegar has done, and for which reason it rises sour in Distillation; tho' a great part of the Acid of Vinegar remains behind when distilled, which is easily perceiv'd by tasting the Remainder, which is very pungent to the Taste; and on trying Distilled Vinegar with Vinegar Undistill'd, the last will be found more sour than the first.

EXPER.

EXPER. IX.

Mercurius Vitæ or the *Emetic Powder* of *Algarot*, is thought to be *Mercurial*, and used as such; however it is not so, but *Antimonial*, and the *Cinnabar* of *Antimony* made of the same Ingredients is the *Mercurial* Medicine; the Case standing thus, *viz.* The two Ingredients are *Sublimate* and *Antimony*, the Salts of the *Sublimate* join the reguline Part of the *Antimony*, and form the *Butter*, of which the Powder of *Algarot* is made; and on the other hand, the Sulphur of the *Antimony* joins the *Mercury* of the *Sublimate*, and forms the *Cinnabar*.

EXPER. X.

Physicians are apprised of what little value *Bezoar Stone* is; but the good Wives and Nurses yet continue its Use, notwithstanding they give an Ounce and half of Gold for an Ounce

Ounce of it: I am convinced it is a Whim, for which we may use *Crabs Eyes* mixed with a very little grated *Nutmeg*. The Renowned Professor *Boerhaave* says of it, *Laudatur quia pretiosus*. Upon this Drug I intend further Experiments.

EXPER. XI.

Laudanum Liquidum affects People's Heads, and begets *Nausea's*, especially if given in a larger Dose, as it is particularly requisite after cutting for the Stone: the following does better; Take an Ounce and quarter of Opium, cut it small, put it into half a Pint of common Water distilled, letting it remain therein 24 Hours, often shaking it, then philtre it, and add thereto three Ounces of Spirit of Wine, it's done; by which process you avoid the Refin, or Sulphurous Part, which is what makes the Medicine offend. Those who approve of adding the other usual

Ingredients

Ingredients of the *Laudanum* for Correction, &c. may do it when the Spirit of Wine is added, and then digest.

EXPER. XII.

Having heard some assert, that the *Aqua spermatis ranarum* contain'd in it a volatile animal Salt, I made a Solution of Mercury in Spirit of *Nitre*, diluting the same by distilled common Water, into which I poured *Frogs Spawn Water*, which made no Precipitation, and which I tryed both with new *Frogs Spawn Water*, and with old; whence I found it a mistake, it being only a Phlegmatick simple Water; and whence I doubt, that a Distillation in the same Manner from *Snails*, and *Worms*, would be of no great use in Medicine; whereas Decoctions of them prudently managed might.

EXPER.

EXPER. XIII.

It is asserted by most that *Ants* afford an acid Spirit in distillation; and that being infused in Water, they communicate a Sourness thereto, so that the Infusion will effervesce with Alcalies; whence they conclude this Animal to differ from all others, the rest of the Creatures all giving an alcalious Spirit: but if this matter be better examined into, we shall find that this Acidity is not a part of the Animal, or one of the Principles of which he consists; but proceeds from what he carries on his Thighs, and Legs, a Vegetable Production; and that if this Creature be cleared of that adhering Matter, and then distilled, &c. an Alcalious Spirit will be obtained, as from other Animals.

The *Bee* likewise carries about the same Parts his Products, which
I are

are wholly Vegetable, viz. *Wax* and *Honey*.

EXPER. XIV.

Philtre Whey, gently exhale a part, set it in a Cellar, it crySTALLIZES, and you have a Salt; exhale again, you have more: this Salt is the nitrous essential Salt of the Grass eaten by the *Cow*, joined to an Animal Mucus, and which being committed to Distillation, gives a Phlegm, a small Volatility, a little foetid Oil, and at last a small Acid: This Salt the *French* grind with crude Mercury, as others do with *Crabs-Eyes*, which they chuse to do, as believing *Crabs-Eyes* may foul the Glands of the Stomach, or clog the Mouths of the Lacteals, which they say, this Salt will not do. The *French* advise it in Consumptions; but I cannot see how any Thing that incides or divides can be good in such a Case; which I refer to the better Judgment of our Physicians, who,

who, I am very sure, excel, and go deeper into things than any in the World; as do our Surgeons too, notwithstanding the great Opportunities the *French* have; and, I believe, I may say the same of my Country-Men the *Apothecaries*.

EXPER. XV.

The Process of making the Præcipitate *per se* being very tedious, and I hearing a *French* Physician say, that it might be done by frequently distilling the crude Mercury; I put Mercury into a Retort, and distilled it up many times, when it came up as fluid the last Time, as the first; whence I found the *French* Gentleman had not worked thereon himself; and that there is no other way but by giving it time, and dividing by Pebble-Stones.

EXPER. XVI.

Pulsatilla, being distill'd with Water, it rises white, and catches
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the Nose when smell'd to, and being kept six Weeks, lets fall a Salt, which is not dissolved by Acids nor Alcalies, and hardly by warm Water.

EXPER. XVII.

Talking with Dr. *Cantwell*, at *Paris*, about the Poison of the Laurel-Water, he asserted, that the Water of the *Laurus triumphalis* or Bay, is an Antidote against that Poison, which I shall try at leisure, as others may do.

EXPER. XVIII. *On Phosphorus.*

Our Phosphorus, being given internally, it had no other effects than occasioning a great *Crepit. Ventris*, or breaking Wind downwards.

EXPER. XIX.

On the Æthereal Spirit.

The Æther or æthereal Spirit being taken internally by mistake, it prodigiously disorder'd the Man,
flung

flung him into Vertigo's, and made him ill for three months, he saying (to use his words) he thought himself bewitched, and did not know how to describe his disorder; but fifteen Drops were taken.

EXPER. XX.

• Upon Myrrhe by a *French* Physician, viz. Take the best Myrrhe, dissolve it in a *Lixivium* of Pot-Ashes, then distill with Water in a small Alembic, or a Retort placed in water, and you will have a small portion of a Chymical Oil, which will have the natural smell of Myrrhe. The same Gentleman, upon Jalap; Take Jalap, make a Tincture in Spirits of Wine, precipitate that Tincture by Water; when the Resin is sunk, exhale that Liquor to an Extract, which Extract will purge stronger than the Resin of Jalap itself. Again, if you draw a Tincture from the said Extract with Spirit of Wine, that Tincture will
not

not be precipitated by water. Again, Take Opium, make a Tincture in Spirit of Wine, exhale it gently to an Extract, dissolve that Extract in distill'd Water, which perhaps will not take in more than the fifth or sixth part, which Liquor will be as strong again as the first Tincture, and will not be precipitated in an aqueous, nor a vinous Menstruum; these on Myrrhe, Jalap, and Opium I have not try'd myself.

EXPER. XXI.

Amber prepared is accounted an Alkali or Absorbent, which is as great an Error as that about Bole-armeniack, &c. for upon all the proper tryals it will be found not to be so. If we take it to pieces by a Chymical Analysis, we meet with an acid Spirit, and an acid Salt: This Ingredient is a Bitumen of a Texture or Make that cannot be altered or worked on by the Stomach; and
indeed

indeed we find it difficult to dissolve by any Menstrua, but the Æther; it is of no use in Medicine in a crude or levigated State.

XXII. An Observation; A Man at *Rotterdam* went into a Druggist's Shop, where he called for half a pint of Oil of Turpentine, and desired the Shopkeeper to lend him a Glass, which having received, and put the Oil therinto, he drank half of it, and went away, desiring him to let it stand a little; and returning in half an hour, drank the rest: after which Doses he was frequently seen in the Streets, which was a surprise to the Physicians, and indeed to my self: It was not known whether he went and drunk Water.

Since I came to *England* I mention'd this to an eminent Physician, who acquainted me that he knew half a Pound drank by a Man, who was only strongly purged thereby.

XXIII.

XXIII. An Observation; *Elixir Vitrioli* is an admirable Medicine, but as managed in the Dispensatories is spoil'd by the too great Quantity of Oil of Vitriol ; for they order above as much again of the Acid Oil as is necessary, which instead of preserving the Æthereal Oils, or fine Parts the Ingredients have to afford, burns or calcines them to a Coal. Quincy, a good Judge of the *Materia Medica*, orders Spirit of Vitriol, and Oil of Vitriol, which must be a Blunder of the Printer, as must the next Process for the *Tinctura Stomachica Amara*, where Spirit of Vitriol is also directed ; he surely intending Spirits of Wine, which if he does in the *Elixir Vitrioli*, he errs in ordering a Pound of Oil to a Pound and half of Spirit of Wine, which is too much of the Oil ; for half a Pound of Oil is enough for four Pounds of Spirit of Wine : Into this same Error does *Stapborst* run,

run, who certainly was a good *Chymicus*.

XXIV. An Observation; *Ens Veneris* is ordered in the Dispensatories to be made of Salt of Steel, or *Vitriolum Martis*; but I would willingly know how then have we an *Ens Veneris*? Which Difficulty is endeavour'd to be cleared in *Quincy's* in vain: The Truth is, we ought to use *Caput Mortuum* of *Dantzick* Vitriol, the Basis of which Vitriol is Copper. Others direct blue Vitriol; but this will not make the Medicine red, which is expected to be. *Staphorst* the quondam Operator at *Cambridge*, and at *Apothecaries-Hall*, runs also into this Error.

XXV. An Observation; *Millepedes*, or *Hog-Lice*, it is the Custom among many People to roll these Creatures up like a Pill in their Hands, which is easily done, and swallow them alive for Medicinal

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Use,

Use, which a Woman having done, the next Day she was very uneasy in her Stomach, of which she complain'd to a Surgeon, who after ten Days swallowing the Creatures, gave her an Emetic, when the *Hog-lice* came up alive together with the Vomit; whence we see 'tis improper to swallow such Animals alive.

One of the first Surgeons of *Dublin* had a Woman under Cure for a Case, in which she likewise swallowed live *Hog-lice* unknown to him; which Woman dying of the Case she was under, and being open'd, the said Creatures were found alive and crawling in her Stomach; which Account I relating to Dr. *Renaud* Physician to King *Stanislaus*, he told me he saw a Boy take a *Scarabæus Rosaceus* or *Rose Beetle*, which he wrapt up in *Butter*, and gave to a Dog, who some small time afterwards began to stare and look wildly about him, turning his Head about

about several Times, as if he heard some noise; when on a sudden he ran furiously away, and was missing the whole Day; and returning at Night, he was almost fatigued to death with running, which he had done to get rid of the Uneasiness in his Stomach occasioned by the Creature's crawling there with his rough Feet.

Other Miscellaneous Subjects.

Lapis quadratus Lusitanicæ: or, the four-square Stone of Portugal.

EXPER. XXVI.

THIS being Chimically examin'd, appears to be a Pyrites of Iron, which being powder'd, and the Magnet being held over it, it attracts it: Again, if diluted *Aqua Fortis* be poured upon it, and suffer'd

to lie upon it a little while, and again diluted when it comes off, and then introduce into this Liquor powder'd Galls, you have a Purple Tincture or Colour, such as Martial Liquors usually afford: This Mineral is likewise found in *Saxony* and *Misnia*.

XXVII.

There are usually found upon Turnips little Hillocks or Excrescences, in every one of which there is a kind of Insect or Worm; so that it is best to fling those parts away, whenever we dress them for eating.

XXVIII. *Aurum Fulminans.*

Having about three Drachms of this Medicine lying upon a Balneum Heat, I went to it next Day to see whether it was dry, when thinking all things were grown cold, I began to unwrap the Paper to view it, when it instantly exploded with a

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terrible Noise, and exhibited a Flash of Light, which is a Phænomenon I have not heard taken notice of by others: This Explosion of the thundering Gold hurt both my Eyes, occasioning a great Flux of Blood to them: It also gave a great Contusion to my Hand, by striking its Force downwards, which is contrary to the Assertion of others who write upon this Subject, and say, that it only gives its Force upwards, or sideways.

XXIX.

A Man brought a certain Mixture to a Chymist in *London*, which he desired to have distilled, which the Servant in the Absence of the Master took in to work upon, which he having set a doing according to the Orders he had received, went down to Dinner; in the mean time the Mixture blew up with a terrible Noise, breaking the

the Vessels, and was almost like to blow the Chimney down, which the Master of the Laboratory coming to be acquainted with, enquired of the Person that brought it, what it might be, who answer'd, that it was a Mixture of Honey and Nitre: So that tho' Nitre alone is not inflammable, yet the Sulphur or phlogistic part of the Honey had afforded Fewel to it, whence a Kind of Gunpowder was formed. This is inserted, to guard others against working on the like Subjects in the same manner.

XXX.

If a *Frog* be put into a Box, and holes bored therein, and the said Box be laid near a Nest of *Ants*, the *Ants* will entirely dissect the *Frog*, and make the finest Skeleton possible of him, leaving even the Ligaments unhurt. If a *Mouse* be put into the same Box, and his Skin taken off, these

these little busy Creatures will make as fine a Skeleton of him too; but if the Skeleton be left with them long, they will likewise go to work upon the Ligaments.

XXXI.

The Yellow Matter or Substance cast out of Mount *Vesuvius* in *Italy*, and sold in the Colour-shops by the Name of *Naples-Yellow*, is a Kind of Oaker, and upon an Analysis affords a small quantity of Iron.

XXXII.

Crude Sulphur and Quick Lime being mixed together in about equal Parts, and put into a Vessel, and cover'd with Earth, will in no long time afterwards burst out into a Flame, and fling up the Earth: This I had of a *German* Physician; I have not try'd it: May we not hence account for *Vulcano's* and Earthquakes?

XXXIII.

XXXIII. *On the Viper.*

It was proved at *Paris*, that the Head of a *Viper* 24 Hours after being sever'd from the Body, would bite a Man, so as to occasion the usual Symptoms, and which happen'd to an *Apothecary's* Journeyman there. This is a Creature of prodigious Life and Vigour; for after the Head is taken off, and the Skin, and all the Viscera taken out, the Body will strongly vibrate or move in a String fourteen Hours after that.

XXXIV. *Mustard-Seed.*

This Ingredient gives a Phosphorus, which is a Phænomenon few would expect.

XXXV.

Black Glistering Writing-Sand.

This being Chymically examin'd, appears to be a Minera of Iron.

XXXVI.

XXXVI.

Hair-Powder is often adulterated or mixt with Lime, which if so, will be discovered by this Experiment, viz. put a little powder'd crude *Sal Armoniac* to the suspected *Hair-Powder*, adding a little warm Water to the Mixture, and stir it about, when if it was adulterated with Lime, there will be perceived a strong smell of *Sal Armoniac*, because the Lime will volatize the *Sal Armoniac*, from the known Reason of it's receiving into itself the Acid that held the volatile Salt, which is then set at Liberty.

XXXVII. *Acid Spirits.*

It has been asserted by some, that all acid Spirits may be reduced to Elementary Water by repeated Distillations; but I believe this to be an Error; for being distilled an hundred Times, they came up acid to the last.

XXXVIII.

Rain-Water, being catch'd in Glafs, and not suffered to come near any Vegetable Substance, or Vessel of Wood, will keep good 40 Years, which has been experienced; and it is to be believed would do so longer.

XXXIX. *Distill'd Water.*

This being likewise kept in Glafs, as abovesaid, has been found to keep good ten Years; and, I doubt not, would keep a great while longer.

XL. *Eggs.*

Eggs being placed under a running Water in a Rivulet, have been found to be good and eatable two years afterwards; and which being put under a Hen produced Chicks. Eggs being also cover'd with a proper Varnish will be good a year afterwards, and being laid under the Hen, produce Chicks likewise.

XLI.

XLI. *Bitters.*

Bitters are seldom found to rise in Distillation; but some Kinds of the Colocinths have been proved to give a bitter Taste in Distillation.

XLII. *Gall Stone.*

This Concretion is prodigiously sulphureous; for it swims on Water and burns like Camphire, whence it differs from the Stone in the Bladder.

XLIII. *On Toads*, by the late Baron Schack, Envoy of *Moscovy*: Take three or four live black Toads, put them into a Bag, add thereto three or four Pounds of Kitchen-Salt, shake them about till the Toads are dead; a little of this Salt he asserted is a violent Poison. This Gentleman also asserted, that a Countryman lying asleep upon the Ground, with his Bosom open, a Toad crept upon him, and laid

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upon

upon his Breast; where the Part afterwards was very much inflam'd: which Things, if Fact, prove some Toads, at least, poisonous, which is denied by many Naturalists.

XLIV. *Acid Spirits.*

To concenter them, and render them of a double Strength, take *Lapis Calaminaris*, powder it, pour any acid Spirit upon it you have a Mind to make your Experiment on; distill gently; there comes over a Phlegm, which take away, and add thereto another Receiver, push the fire, and there will arise the heavy Acid Spirit much stronger than before.

XLV. *On Glafs.*

To reduce Glafs again, take Salt of Tartar or Pot-Ashes three parts, add to it one part of melted Glafs, expose it to the Air, and it is no more Glafs; it's Earth may be precipitated with Vinegar;

Vinegar. This was asserted by a *French* Physician, I have not tried it.

XLVI. *A Spirit prodigiously volatile.*

Take double *Aqua fortis* one Ounce and a half, Quicksilver an Ounce, let it dissolve, and stand till it is near cold, not quite, for fear it should crySTALLIZE, then put it to two Drachms of the best *French* Spirit of Wine, shake it about, it looks Milky, and there will be perceiv'd upon the uppermost Part a Kind of Oil, which you must nimbly separate by a Glass-Funnel, by stopping the Stem with the Thumb, by withdrawing which a little, you let out the lowermost Liquor till you come to the uppermost, which is what you want, and which must be convey'd into a Bottle with a Glass-Stop, or else it will be gone; if you don't succeed the first Time, you must try again till you do: This
Spirit

Spirit or Oil is so volatile, that a Drop being let fall from a Height of five or six Feet it does not go to the Ground; or if you drop a Drop on your Nail, you'll see it rise into the Air: This Preparation is much more volatile than the Æthereal Liquor.

XLVII. *A Spirit that is always in a Fermenting State, or in Motion.*

Take Block-Tinn two Ounces, dissolve it in *Aqua Regia*; take also thin hammer'd Lead an Ounce and half, dissolve that in *Aqua Fortis*, mix the two Solutions, add to them an Ounce and half of Antimony, and two Ounces of Mercury, put them into a Glass Retort, join a Receiver, lute it, leaving a Pin-hole in the Lute, distil, there comes over a white Spirit, which must be kept in a Glass with a Glass-stopper, so as to be but half full, to give it room to move. To hammer Lead thin you must

must do thus, *viz.* put many pieces of Lead one upon another, so beat it out, then you can dissolve it, otherwise not. Written to me by a German Chymist. *I've not try'd it.*

XLVIII. *To receive Mercury without Distillation.*

Take *Sublimate*, add to that an equal weight of Filings of Steel, pour thereon a Quart or more of Water, boil; and before the Water is boil'd away, you'll see the Mercury running.

Of the Danger the Publick are under from the present Malignant Practices in Medicines, and Drugs, &c. with the Ways to discover and avoid the same.

IN the former part of this Work, and former Edition, I have mention'd a Design to write *ex professo* on

on the *Materia Medica*; in order to shew the Mistakes about the same. There is another thing full as necessary as that, on which we wou'd likewise say somewhat in these Papers, *viz.* the shocking ill Practices, Adulterations or Sophistications in Medicines both Chymical and Galenical, as well as Drugs; which are grown to such an height now, and thereby the Health and Life of Mankind so play'd with, that there are no Crimes Men commit that more loudly call out for a Law for Punishment than they. This is obvious and plain at first view; for if a Medicine that costs the faithful Preparer four Shillings per Pound to make it, be sold by some of the Moderns for twenty Pence (as is done) we need no mathematical or logical Reasonings to prove that the said Medicine must be a Fraud.

It is these wretched Practices that have brought the most noble Science,
Chymistry,

Chymistry, into contempt, and made it now as much a Trade as Shoemaking, &c, &c. But I hope yet to see it revive, and bear the esteem which That great Revealer of Nature's Works deserves.

Far, I say, far be it from me to design in the least to give offence to honest Persons and Men of Integrity, concern'd in Medicines and Drugs, such being yet, I hope, to be found among us; who, I doubt not, will readily join with me in this Search; and as to the Guilty, I am not anxious about what they think.

*A Discovery of some of the most
flagrant ill Practices in Me-
dicines and Drugs, &c. viz.*

I. Flowers of Sulphur.

THIS is often only vulgar Roll-Brimstone powder'd, which it self is an adulterated thing, and such as

M

Matches

Matches are made of and having Spirit of Vitriol added thereto, which a Patient of an Apothecary's, a Friend of mine having taken, he had like to have lost his Life from the Sharpness thereof.

This will be discover'd thus, *viz.* Pour warm Water on the false sort, and the Sourness will be taken out by it, and the Water when separated from it will be acrid; which will not be the same with the true.

Again, let a Gallipot be fill'd with the true, and when emptied out, let the same be fill'd with the false; when let both be weighed, and the first will be found much lighter than the last. We know that Flowers of Sulphur should be a little more acrid than beaten Brimstone, because its innate acid Spirit is rarified in some measure, by the heat the Sulphur receives to raise it into Flowers; but that Acidity is ill imitated by our *Falsarii*,

II. *Album Græcum.*

This we know should be Dog's Dung, a thing easy to be had, which on examination, I have found to be Lime and Hair made up in that form; which Fraud will be discover'd by these Experiments, *viz.* Let true *Album Græcum* be distilled in a Retort by a good Heat, it affords a volatile Salt, a Spirit and Phlegm.

The false Sort will afford nothing but a little that the Hair gives: The true being put on an hot Iron, it gives a copious white Fume for a long time, which is the Exhalation of the aforesaid Principles. The Lime and Hair will give but little Fume in respect to the other, for nothing comes from the Lime.

Let an Ounce of the false Sort be rubbed in a Mortar with half an Ounce of crude Sal-armoniac, adding thereto a little warm Water, the Sal-armoniac will be render'd

volatile, and a strong Smell will be perceived; which will not happen on mixing the true with the Sal-armoniac.

III. *Black-Cherry Water.*

This is imitated by a shocking Practice indeed, *viz.* by distilling Laurel with Water, the direful effects of which, we have had Instances not long since, both here and in *Ireland*: myself gave only three Drachms of the said Water of Laurel to a Dog a foot high, who instantly was struck dead. This dangerous Water will easily be distinguish'd from the right by its Taste, and Heat, and from its having an Oil floating about it, which true Black-Cherry Water has not. It has likewise a prodigious strong Scent, as it were of Kernels, whereas that of Black-Cherries is very weak in respect of it.

The next Imitation of this Water is by distilling bitter Almonds in Water,

in Water, which tho' it is not giving an hurtful thing in the delivering a *quid pro quo*, yet it is letting the Patient go without what the Physician designs. By this last way is almost all the present *Ratiffa* made.

IV. *Syrup of Violets.*

This is done by our Artists of Logwood that the Hatters dye Hats withal, coarse Sugar, and Water; which will be discover'd thus, *viz.* The true Syrup will have the smell and taste of Violets; which that of the Logwood will not: The true will answer the usual Tryals of turning green when joined to an Alkali, and red with an Acid; which the false will not. The true will not grow black with the other Ingredients of the Hatter's Dye, as that of Logwood will.

V. *Oil of Aniseeds.*

This is usually brought from *Tyrol*, and when here, is mixed with
half

half its weight of Rapeseed, or other mean Oil; and to make it candy in the Winter, some base Parmacitty is added thereto, which Frauds are thus discovered: If true Oil of Aniseeds be dropped on white Paper, and held near the Fire, the Oil will rise off, so as to leave the Paper near clean: But if the same Tryal be made with the false sort, the Paper will remain very greasy; because the base Oil in it, and the Parmacitty, cannot rise off by the heat that is given.

Again, true Oil of Aniseeds being dropped into Spirit of Wine, it is dissolved thereby: But the false makes the Spirit grow whitish, and look thick, because the Rapeseed Oil, or others mixed with it, refuse to be dissolved by the Spirit.

Again, let a Pound of good Oil be put into the Alembic with Water, and distilled, it all comes up; let the same Weight of the other be put there,

there, perhaps not above half a pound is had ; because the Sperm and Rape-Oil cannot rise by that manner of Distillation.

VI. *Crabs Eyes.*

These are a useful part of the *Materia Medica*, and often used, so that it is pity we should not be supply'd with the genuine thing: They are imitated by making up Pipe-clay in the form of *Crabs Eyes*, which Clay is no Absorbent, nor of any use in Medicine; of which if we speak to our Sophisticating Artists, they will tell you they give nothing hurtful in the Substitution. But if a Patient dies for want of the Medicine intended by his Physician, I would know how far short of poisoning him this falls? The Fraud is discover'd thus; strike on the true thing with an Hammer till it breaks, and observe the Surface within, which looks like polished white Marble; the adulterated

rated looks rough, as it were a Powder stuck or caked together.

Again, pour any acid or sharp Liquor on the true, a great Effervescency or Stir is seen; pour the same on the false, all lies quiet.

Again, distill the true in a naked Fire, they give Principles inherent to animal Bodies; distill the false, they give nothing if dry. Pour diluted *Aq. fort. simpl.* on the powdered *Crabs Eyes*, they are dissolved thereby, and converted into a Kind of Salt, which does not happen with the false. It is scarce needful to acquaint those not conversant in Physic that they are not the Eyes of the Crabs.

VII. *Salt of Amber.*

This Medicine is of great Consequence in the Practice of Physic, and none more adulterated than it: It is imitated by the modern Sophisticating Artists by mixing or gently grinding common or crude *Sal-Armoniac*

moniac with the browner Oil of *Amber*, which Fraud is thus detected: True *Salt* of *Amber* will be dissolved in Spirit of Wine; the false sort just mentioned will not, nor will any other Salts in use but *Terra foliata tartari*, and Corrosive *Sublimate*.

If the false be mixed with quick Lime, and a little warm Water be added thereto, stirring all about, a strong smell of volatile *Sal Armoniac* will be perceived; which will not happen with the true.

VIII. *Spirit of Harts-Horn.*

This is much adulterated, as thus, *viz.* some of these Artists are base enough to make a Spirit out of Horse's Bones, or any other Bones that they can cause to be pick'd up.

Others mix Lime and crude *Sal Armoniac* together, grinding therewith a few Drops of fœtid Oil of any Bones, and pouring warm Water thereon, by which Process the *Sal*

N

Armoniac

Armoniac will be render'd volatile by the Lime, and so it will catch the Nose; but the Acid Part of the *Sal Armoniac* will be dissolv'd as well as the Alcaline, so that it is not the Medicine we expect. This Fraud will be discover'd thus, *viz.* Put true Spirit of *Harts-Horn* into a Cucurbit or Retort, place the same in a Water-heat, the Spirit will all rise.

Put the just mention'd false Spirit into the same Vessels, distill, some volatile Salt and the Water will arise, and the acid Part of the *Sal Armoniac* will remain behind.

Again, put two parts of Spirit of Wine. to one part of true Spirit of *Harts-Horn* in a Vial, stop the Mouth with your Thumb, strike the bottom of the Vial against the Palm of your Hand, the fluid Mixture will become a Solid; so that if you turn the Vial upside down, nothing will run out, which is called an *Offa Helmontiana*. Put the false Spirit

to Spirit of Wine in this manner, the same Effects will not ensue.

This Experiment with Spirit of Wine is the best whereby to know whether Spirit of *Harts-Horn* be made with Lime; for if it be, it will not coagulate with that Spirit, as the true will. And this Tryal also shews whether Spirit of *Harts-Horn* be well charged with its own Salt; for if it is not, the expected Coagulum will not succeed.

IX. *Salt of Tartar.*

For this we usually have given us only powdered Pearl-Ashes, or Pot-Ashes. The Fraud is known thus, viz. True *Salt of Tartar* is totally dissolved in Water: Pearl-Ashes, &c. will leave about a fourth part undissolved: If they dissolve the Pearl-Ashes, philtre, and exhale, and give us that, the Salt remaining will be whiter than true *Salt of Tartar*,

and be more pungent to the Taste than it.

X. *Sal Mirabile.*

The true sort is now seldom made; what is vended is only the common *Epsom* Salt in larger Crystals; done where Kitchen-Salt is made near the Sea: This is easily distinguished by the taste; the true having a vitriolic taste on the Tongue, and the false a bitter one like the *Epsom* Salt. Or,

Diffolve the true in warm Water, set it in a Cellar, it shoots into Crystals; proceed in the same manner with the false, it does not give those Crystals; because it wants the Acid of the Oil of *Vitriol*, one of the Ingredients of the *Sal Mirabile*, and which is necessary to form Crystals; and because it has in it too much of the Alkaline part of the common Salt; for Alkalies run not into Crystals.

XI. *Salt of Wormwood, Salt of Broom, of Chamomile, of Juniper, of Ash, and the like vegetable Salts.*

For these we usually have given us only powder'd Pearl-Ashes or Pot-Ashes, or these dissolved, philtred, and exhaled to dryness; the Frauds are thus detected, *viz.*

The true Salts are totally dissolved by warm Water; the false above named will leave a fourth part undissolved; the false are very white, the true are brown, unless they are put into a Crucible, melted, and then dissolved, and philtred, and the Water drove away till they are dry: which if they are so treated, they will become more sharp or pungent to the Nerves of the Tongue than they ought to be.

XII. *Sperma Ceti.*

This is very much adulterated, and chiefly by mixing with Tallow,
which

which is easily perceived by giving it a friction between the Fingers and the Thumb, and holding it to the Nostrills, which will have the same smell as if we rubb'd our Fingers on a Candle; whereas the true *Sperma* so try'd has a clean and grateful Scent.

Again, the false *Sperma Ceti* will soon turn yellowish; whereas the true will keep white much longer.

XIII. *Præcipitatum Rubrum*, or *Red Precipitate*.

This is usually adulterated by mixing red Lead with it; whence this cannot have the same Power for a Surgeon's use as the true. The Fraud will be discovered thus, *viz.* by converting the *red Precipitate* into running Mercury or Quick-Silver by the proper Operations (as all Mercurial Preparations may be done) when more Mercury will be obtained than from the false.

Again,

Again, by adding a proper Alcalious Matter to the false sort, and distilling off the *Mercury*; and then by treating the Remainder with a proper Flux, when the Lead will be had from it.

XIV. *Native Cinnabar.*

This is usually adulterated by mixing with it red Lead, such as the Pencils are made of, and not the same as just now mentioned with the *red Precipitate*, which is made by Fire; ---this Fraud is discovered by much the same Experiments as in the last Article.

XV.

All the purging Medicines in general are likewise basely prepared by some; for Example, *Electuarium Cariocostinum* should have in it for its purgative, *Scammony*; instead of which we have given us *Gum-boge*,
which

which is an Ingredient rarely or never now prescribed by Physicians.

Electuarium Lenitivum should have in it Leaves of *Senna*; instead of which, *Gum-boge*.

Purging Spirit of *Scurvey-Grass*, likewise *Gum-boge* instead of using of *Jalap* and *Scammony*, directed by the Dispensatory. It is indeed difficult to distinguish the Fraud in the Electuaries, where there are so many Ingredients blended together; but who ever takes such adulterated ones, will soon find the Effects in his Health. But as to the Spirit of *Scurvy-Grass*, the Fraud may be known by dropping it into Water, when that with *Gum-boge* will give a very yellow Precipitation, whereas the right will give a white. Instead of the various Spices that Medicines should have, *Jamaica* Pepper, forsooth, must serve for all by our Artists.

XVI. *Peruvian Bark.*

This is a part of the *Materia Medica* that is extremely necessary, but much adulterated, especially for the use of the Country, (for there goes a Cant-Word, *Country-Goods*) whither there goes many Hundred Weight of Oak-Bark dyed in the Dyer's Dye-Pot.

The Fraud is easily known by breaking a piece of true Bark and a piece of the false, and smelling thereto; likewise by tasting them both; also by breaking the false and observing the inside, which will not look the same as the outside; and lastly, by filling a Gallipot with the Powder of the true, and then filling the same with the Powder of the false, and weighing them both afterwards, when the true will be found much lighter than the false; neither will the false give a Resin like the true.

XVII. *Tartarus Vitriolatus.*

For this Medicine I have seen common *Saltpetre* served; this Fraud is easily discover'd thus, *viz.* by the Taste, and likewise by putting a little of each into the Fire, where the *Saltpetre* will burn or deflagrate, and the true *Vitriolated Tartar* will not.

XVIII. *Diaphoretic Antimony, and Ceruss of Antimony.*

For these Medicines the Buyer often receives Chalk: it's known thus, *viz.* Pour an Acid on either of the genuine Medicines, all lies quiet: Pour the same on Chalk, a great Stir or Effervescency ensues; the true Medicines will not be dissolved by Spirit of *Vitriol* or the like Acid; Chalk can be dissolved. *Diaphoretic Antimony*, or *Ceruss*, may be turned back again to *Regulus of Antimony*, or to *Antimony* itself, by chymical Processes: Nothing is had from Chalk.

XIX.

XIX. *Spirit of Turpentine, call'd
the Æthereal Oil.*

For this we seldom receive any thing but the common Oil of *Turpentine*. It's known thus ; Mix Spirit of *Turpentine* with Spirit of Wine, tho' it is not dissolv'd, or does not unite therewith like æthereal or chymical Oils, yet it does so better than Oil of *Turpentine*, for that occasions a great Whiteness, or makes a troubled Mixture. Drop two or three drops of Spirit of *Turpentine* on white Paper, and the same number of Drops of the Oil, holding both to the Fire ; when dry, that with the Spirit will look clearer than that having the Oil.

Again, put a Pound of Spirit into the Alembic with Water, distil, all comes up clean ; distil as much of the Oil, a resinous or pitchy Matter is found floating in the Still.

XX. *Chymical* Oils are sadly adulterated, some are mixed with

Sallet-Oil, some with Linseed-Oil, others with Spirit of Wine. If with the said Oils, you discover the Cheat thus ; mix genuine Oil of *Cloves* or the like with Spirit of Wine, it is clear. Mix Oil of *Cloves* adulterated, as said, with Spirit of Wine, it becomes thick, or looks troubled, because the expressed Oil in it refuses to be dissolved by the Spirit of Wine,

Drop true Oil of Lavender, &c. on white Paper, hold it to the Fire it is exhaled, and the Paper remains clean. Make the same Experiment with the false Oil, the Paper is left greasy. Distil true Oils with Water in the Alembic, all comes up ; distil false, the Sallet-Oil or Linseed, that had been mixed therewith, will be found in the Still, and only what was true will arise.

If chymical Oils be mixed with Spirits of Wine, and you pour them into a Glass of Water, a white Precipitation

pitiation enfues ; which don't follow if true.

XXI. *Turpeth Mineral.*

This is too often adulterated by mixing with it what is called *Masticot*, or yellow Lead, which is one of the most dangerous Tricks that is play'd : it is discover'd thus ; if Lime or Filings of Steel be put to the *Turpeth*, and the Mixture distilled in an earthen coated Retort *igne aperto*, having a wet Rag tyed to its Pipe hanging in a Bason of Water ; all the Mercury will be had in a running crude state in the Water, and the Salts that held it in disguise will only remain behind with the Absorbent added. If false Turpeth be so treated, less Mercury will be had from a weight equal to the true just named ; and besides, by the Use of proper Fluxes the Lead may be had out of the Fæces or Remainder in a crude state ; but as some of these

Exami-

Examinations or Tryals are not easy to be made by Persons not conversant in Chymistry, the chief Remedy they have left, is to apply for Medicines and Drugs to Men of Integrity and Veracity; for such, we hope, are yet to be found. Of these Subjects more in due time.

*Calculus Humanus, or Stone
in the Bladder.*

THIS Subject has employ'd both the Thoughts and Hands of many great Men, and most of them have taken their Hints from *Helmont*, who doubtless has delivered many things worthy Notice; however, I must confess I always doubted his Veracity in several Respects, and account both him and *Paracelsus* to have wrote more on Enthusiastic Principles, than Mechanical ones; the latter of which

which Authors Book in Folio might be reduced to a Treatise of a Groat. One of the chief Things or Experiments that has led ingenious Men into a Hope that the Stone will some time or other be dissolv'd by Remedies, is that of Sulphur's being dissolved by Oil, a mild Menstruum, which is so difficult to be touch'd by other Menstruums; likewise that of divers Stones being dissolved by a Spirit of Rye-bread. After *Helmont*, the first Chymicus's in the World thought of this Thing, *viz.* The Truly Admirable *Boyle*, *Becher*, *Kunckelius*, *Dipple*, who wrote under the borrowed Name of *Christianus Democritus*, Professor *Stahl*, Baron *Schack*, a Gentleman well vers'd in the most difficult Part of Chymistry, the Mineral; the Professor *Magnificus Bullfinger*, *Rosser* the Famous Chymicus now at *Hamburg*, the present great Professor *Hoffman*, and the Renowned Professor

feffor *Boerhaave*: These great Masters in Chymistry have wish'd for the effecting the great Work of dissolving the Stone; and the last of which has laboured therein many Years: but these truly able Chymicus's not having brought about the Work, I confess that I, such a *Tyro* in respect to them, could have very small hopes. However, for Amusement sake, I made some Tryals, tho' without the Success wished for, which I will set down, to save other abler Inquirers the Trouble of going through the same again.

Menstruums

*Menstruums or Liquors tried on the
Human Calculus's, out of the
Bladder.*

Spirit of Manna.	Spirit of Rice.
Spirit of Honey.	Diluted acid Spirit of
Spirit of Bread, of	Sal Armoniac.
Wheat.	Diluted Effentia Dia-
Spirit of Sugar.	phoretica.
Spirit of Barley.	Diluted Spirit of Alum.
Diluted Spirit of Salt.	A. Solution of Nitrum
All the Kinds of Aquæ	Antimoniatum.
Fortes diluted.	Wine Vinegar; for all
Lotio Mercurialis di-	the Vinegar gene-
luted.	rally in use, is only
Spirit. Vitriol. Philo-	Small-beer, which
sophic: diluted.	when in the Hands
English Vinegar dilu-	of the Chandlers or
ted.	Retailers, has two
Sour Milk.	parts of Water ad-
Juice of Lemons.	ded to it.
—of Seville Oranges.	Diluted Spirit, dis-
Cyder the sharper sort.	till'd from Sal mira-
Diluted Verjuice.	bile.
Sour Small Beer.	A diluted Solution of
Spirit of Guaiacum.	Nitr. Fix.
Of Verdigrease recti-	Gas Sulphuris.
fied.	A Spirit distill'd from
Spirit of Tartar.	Wood Soot.

Many of which Liquors will dissolve the lighter Chalky-Stones out of the Bladder, such as I had given me by that very able Surgeon Mr. *Freke*; but others that I had of that Master of his Profession, Mr. *Chefelden*, and of the Ingenious and Worthy Gentleman the Rev. Mr. *Hales*, (who has carried this Matter about the Stone further than all others,) were of a prodigious Hardness, some of which looked like a polished Marble when fawn asunder, and which required the strongest Spirit of Nitre to dissolve them.

Portland-Stones, Pebbles, Flints, and Marble may all be dissolved in some time by a mild Menstruum, which the Stomach or Bladder could endure; but the Animal Mucus in the Calculus, which is one of its component Parts, hinders the Action of the stimulating Menstruum, and thence prevents the Dissolution of it.

The

The Attempts I propos'd were all by Injection into the Bladders of Dogs, &c. which will bear all the Liquors just mentioned; for to attempt by the Mouth, and go the Circulation, to me seems a mere Chimæra; and all that have hitherto offer'd to Sale *Nostrums* to do the Work by that means, have either been deceived themselves, or had a Design to deceive others: But altho' the Dogs bear quietly enough the Injected Liquors, I cannot advise putting the same in Practice in Persons, because of the extream Tenderness of the Parts, and the need there is of repeated Injections. The Human Calculus being put on an Hot Iron, and pressed a little by any Thing hard, tumbles to a Grey Powder or Earth, which is dissolved by *Aqua Fortis simplex*.

When *Aqua Fortis* is poured on the Calculus, no Effervescency is seen;

nor when *Aqua Fortis* goes on the Ashes of it.

The Calculus has no Taste.

Calculi have a Kind of Shell or Cover like Bezoar.

Calculi don't grow any harder by being kept.

Being distill'd, there comes forth white Flowers or a volatile Salt, and a foetid Oil, &c. which has the same Smell as Distillations of Animal Substances have: They may most properly be called an Animal Tartar; of which Nature are the Gouty Chalk-Stones in the Fingers of Gouty People.

Of all Menstruums I have tryed on these anomalous Concretions, the following has the greatest Effects, *viz.* Cut our Phosphorus into very small bits, spread them on the funnel used to let alcalious Salts run *per deliquium*, place it in a Cellar for some time, when the Phosphorus will turn to a Liquor or *Liquamen*; put this *Liquamen*

quamen into a Spoon, which hold over a Lamp of Spirit of Wine, when in time the humidity will be exhaled, and the Phlogiston or sulphureous part will take flame, and be consumed, and there will remain an acid Liquor very pungent or sour, which being diluted by several times it's quantity of Barley-water, is the Dissolvent: This, I say, will dissolve more Stones, than all other mild Menstruums; yet I cannot advise going to work on the Injections; and indeed Mr. *Hales* told me he would not advise it neither.

Touching the Stone in the Bladder, it is my firm belief that the *Materia Calculi*, or the Matter or Root of the Stone is in all Mankind, altho' it does not actually come to be a Stone in every Person. It would be a glorious work if any Physician, Chymicus, or others shou'd be so happy as to hit on means to destroy the Radix, or to hinder that propensity in the human

human Latex's to run into such Concretions, which, I know, one of the first *Medicus Chymicus's* in the World is now attempting. While I attended the Colleges at the University of *Paris*, and Chirurgical Lectures, one of the first Surgeons of that City in his Discourses related the following, *viz.*

That a young Woman playing Tricks with a Bodkin in a certain Part, let the same fall into her Bladder, when not lying there long, and being afterwards extracted, was found cover'd with a Calculous Matter. If any one makes Water for some time into any Vessel, and only empties out the Water without washing the said Vessel, he will soon see it lin'd or coated with a true *Calculus*.

For the Use of Surgeons.

I Ask pardon, GENTLEMEN, for meddling in your Profession, which

which I do not pretend to understand; I only desire your Leave to insert here a Hint or two about some Things I have found to be Fact, which if they be of use to Mankind, I have what I propose.

I.

An Unguent, that I and others have found to be of Service in Ulcers, *viz.*

Rec. Ceræ Flav. Unciam unam.
Ol. Hyperic. Unciam dimid.
Minii, Unciam dimid.
Phlegm. Vitriol. Drachm. unam.
Nitri, Drachm. unam.
Sal. Saturn, Drachm. duas & sem.
Sulphur. Antim. Drachm. duas & sem.
Vitriol. ad albedin. calc. Drach. duas & sem.
Terebinth. Drachm. unam.
Camphor, Gr. decem.

Fiat Unguent. S. A.

Which I commit to your better Management for its Use: If it is not soft enough, add a little more of the *Ol. Hyper.*

II.

It is sometimes found difficult to stop the Progress of Mercurial Medicines in a Salivation; the following has been found to succeed better than other Things, *viz.* To give two or three Grains of *Aurum Fulminans* made into a Bolus with any Conserve once a Day, and to purge a little with the true *Sal Glaub.* for *Mercury* runs greedily into, or joins with Gold, which is evident from many Chymical Experiments. This *Aurum Fulminans* given in any higher Degree, will beget great *Tormina* in the Ventricle, and Intestines; but especially in the former: I mention true *Sal Glaub.* for almost all the Salt vended under that Title at present is a false Preparation; and indeed it is a shocking thing to consider the dangerous Practices of the *Falsarii* of the Present Time, among whom it
is

is the sole Study to adulterate and sophisticate in the Preparation of Medicines, both Chymical and Galenical; about which I have talked with several of the learned Members of the College of Physicians, and concerning which I may say more in due time; as well as on other Mal-Practices exercised in Eatables and Drinkables.

III.

Touching a true Dissolvent for the Cerumen Auris.

I have found by Experience that warm Water does readily and entirely dissolve it; for it is a kind of Animal Soap: Water therefore is more proper for this use in the Ear than Oil.

Highly rectified Spirit of Wine has generally been directed to preserve *Cadavera*; but I have found that if used so strong, it shrivels, contracts and spoils them; and that a Mixture

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of

of three Parts of Spirit of Wine, and one of Water does best for the Purpose.

IV. *To cure Burns without suffering Pain.*

The curing Burns without Pain, to some, I doubt not, will sound strange ; which however, if the Burn don't happen on the Trunk of the Body, or Head, will be found to be fact, *viz.* as follows : As soon as a Burn happens to any of the Limbs, suppose a Hand, or Foot, let the Part immediately be put into a Vessel of Water ; and if it happens in the Winter, let a little warm Water be added to the cold, to take off the great Coldness, and to bring it as near as can be to the State of Water in the Summer, whereon the Sun don't shine ; for if the Water be too cold, the Person will be uneasy : Again, Care must be taken, if the Thing happens in the Summer,

mer, and, indeed, the Winter too, that the Water does not grow warm by continuing the Limb in it ; for if it does, the Patient will be made uneasy from that reason, which must be remedied by prudently adding now and then a little cold Water. In this Posture very little or none of the usual tormenting Pain will be felt, which shews that the Air is the Cause of the Pain. In this manner the Part must be held four or five Hours, taking it out now and then, to feel whether the Pain be gone, which if not, it must be put in again ; but if it is, proceed to treat it with the following Unguent.

*Recipe Ol. Olivar. Unc. Quat.
 Ceruss. Unc. unam,
 Axung. Porcin. Unc. unam.
 Sperm. Ceti, Unc. dimid.
 Cera Flav. Drachm. duas.
 Vitel. Ovor. duor.*

Powder the Ceruss, and boil it in the Oil till dissolved and is transparent,

parent, then stop, for it must not be thicker than a Syrup, or Turpentine ; then add the *Axung. Sperm. Ceti*, and Wax, stir it well till cold, then beat it in a Glass-Mortar, with the *Vitell. Ovor.* or instead of the *Ol. Olivar.* may be used *Ol. Hyper.*

BEING solicited very much by many of the Gentlemen of the Ingenious Profession of Painting to find them a florid lasting Green Colour, in which respect the World was always deficient, I worked hard on that discovery jointly with a Virtuoso, which at last was accomplish'd; as were likewise some other Colours accounted by Artists to be useful. And while I was on these Searches, the House-Painters believing I knew the Nature of Colours, applied themselves to me for help in the deplorable Cases many are under from the Use of their Colours. This excited

cited me to a thorough Search into all the Ingredients or Preparations used in their Business, whereby to come at the Knowledge of their Enemies, which I find to be seven, of which two Mercurial, one Arsenical, and two of Lead among the Portrait-Painters, which they using in small Quantities and little Dawbing, no Mischief arises to them; and in the Hands of the House-Painters four, *viz.* two of different kinds of Lead, Red and White; one Mercurial, which is the factitious Cinnabar, and one of Verdigrease: From the Red Lead and Cinnabar they receive hurt; but the Source and chief Spring of their Destruction comes from the White Lead, and the Verdigrease, which containing either a Mercurial or Arsenical Principle, cause Gripings, stop the Excretion both of the Fæces and Urine, bring on Spasms, Tremblings, Difficulty of Breathing, Suffocations, excessive

excessive Vomitings, Irritations to Stool, and Ulcers in the Intestines, &c. with Lameness, which terrible Effects fall on the Colour-Men, also Verdigrease-Makers, Makers of White Lead, those who Tin over Metals, Plumbers and Painters, among whom I have met with sad Objects; but none so bad as the Plumbers and Makers of White Lead. The bad Effects of the Verdigrease and White Lead are such, that one of the best Artists in Colours I have met with, told me, that a Cat cannot live long in his House, but all die by those Ingredients: And I saw an Experiment made in the *Rue St. Honore* at *Paris* by a Virtuoso, who placed a Pigeon in a Cage, which stood on the Window of a Colour-shop as far as it could out to the Street, when notwithstanding all proper Care was taken to feed him, &c. he soon droop'd and died. Verdigrease, or the Green Colour is very much used in *Holland*;

land; for in and about *Rotterdam* a Man scarce seeth any other, and where the People who work therein are very wretched; which also is much used in the *West-Indies* on the Vessels, &c. that go to Sea. The Case of poor Workmen occupy'd in these Things is very hard, and no great deal is to be done for them; however, I have seen some good Effects from the following Preventatives, and Methods of Cure, viz. Let the Plumbers, and those who tin Metals over, procure a large Sponge, which let them fill with Water, or one Part Vinegar and three Parts Water, squeezing it afterwards gently out; and by means of two Strings conveniently ty'd thereto, let the same be fix'd over the Mouth and Nostrils, which will greatly hinder the noxious Fumes from entering; and which Practice I have found of great use in a chymical Laboratory when we have to do
with

with acid Spirits, or mix Sublimate with the Mercury for Calomel, &c. Let also the same Method be used by the White-Lead Makers, Makers of Verdigrease, Colour-Men, and Painters; and let all these Artificers procure Gloves to be made of Bladders, which let them dip in a Mixture of Vinegar and Water as before-said, and wear the same while at Work, which will keep off the Evil much longer.

As to Methods of Cure, Professor *Hoffman*, First Physician to the King of *Prussia*, and one of the first Chymicus's in the World, advises, if Cholicks ensue from the White Lead and Verdigrease, to use Glysters of Oil, Butter, or fat Broths, and to give Oils internally, or melted fresh Butter; then to drink warm Water till the Patient vomits. If Palsies come on, to bathe in Baths or warm Water, and to continue a Milk Dyet: And great Care ought
to

to be had, that the Oils given be fresh; for I have observ'd that express'd Oils are noxious and unfit for Use in fourteen Days; nay, an Emulsion of Sweet Almonds made in Water I have found to grow acrid in one Day.

A renown'd Professer says, he knew a Woman cured of a violent Asthma contracted from White Lead, by drinking Vinegar.

But I have thought of a better and more sure Cure than all this, which is to send the White Lead and Verdigrease to the Bottom of the Sea, or never to use them; in lieu of which, I am certain from Experiments, that a good innocent green Colour is to be made; and I would for the Good of the poor Sufferers, bestow Pains to produce them a white Preparation instead of the poisonous White Lead.

Ramazzeni has spoke admirably
de Morbis Artificum, and better than

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all

all others I know of; but I have not met with any in the Profession of Physic or Chymistry, who have fully examined the Nature of Colours as to Health.



MANY



M A N Y U S E F U L
D I S C O V E R I E S O F A R T S,

O f R e a l

Benefit to the Publick,

That occur'd to the A U T H O R during
many Years Researches in Chymistry.

P A R T I I I.

I.

*To preserve Sperma Ceti white, for
the Use of Druggists and others.*



T A K E highly rectified Spi-
rit of Wine, that is, of
Malt; put therein to the
Sperma Ceti, let it remain
in about half an Hour, shaking it

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often

often about, pour the Spirit off from it, and lay the *Sperma Ceti* upon Paper to dry in the Shade: This same Spirit of Wine will do for two or three Parcels of *Sperm*; and then, if it be distill'd up in *Balneo Mariæ*, it will serve for the same Use again, and so on for a considerable Time; and if it is at last distill'd up in the *Balneo* as afore-said, it will serve for most Extractions, such as Colocinth, Jalap, Scamony, Agaric, Ellebore, &c. or to burn in a Lamp.

II.

To hinder the Offence in Back-houses.

Let a Peck of unslack'd Lime be thrown down, which will have the desired Effect.

III. *Lasting Writing.*

Write upon white Paper with a good black-lead Pencil, then take the White of an Egg, beat it out with a
whisk,

whisk, as is done for clarifying Syrups, with which cover the Writing thinly over, then place it in a Tin or other Vessel swimming upon hot Water, by which the Egg will be dried : This Writing cannot be discharged by any acid Spirits, without destroying the Paper, neither will any time obliterate it; whereas all kinds of Ink will be lost by Time; even by carrying Writings to Sea, they will be in a great measure lost; so will Lancets, &c. become rusty; which proceeds from the saline Points carried about in the Air: for we see, that Sea-water thrown upon Writing will totally discharge it. Inks are readily discharg'd by all acid Spirits, and particularly by Spirit of Salt : It is with this, without its flowers, that Knaves have discharged Writings, and not *Aqua fortis*; for that leaves a Yellowness that is seen; when they have taken out the Writing, they make the Paper bear Ink again for their ill purposes,

poses, by applying to the part a Mucilage of shreds of Leather boiled strongly in Water. Having been asked by Ladies sometimes, what wou'd discharge Wine out of Linnen, I inform'd them that Stains of Red Port are discharg'd by Spirit of *Sal Armoniac* ; and Wax, dropt on any Garment, is taken away thus, *viz.* Wet a Rag with Water, put into it Embers of Wood, cover it by folding the Rag over it, touch it to the Wax, and it forthwith goes off.

IV.

A durable Writing another way.

Let an Ink be made with the *Gum Arabic* dissolved in Water and finely ground burnt Ivory, and write therewith, which acid Spirits cannot discharge ; and to secure it against attempts by hot Water, &c. the Writing may be cover'd with the beaten White of Egg, as aforesaid.

V.

V.

To render Cordial Waters soft and mild.

When the Cordials are made, put them into flat Pans, the same Women bake Puddings in; set them in a pretty large Room, where there is no Fire, where let them stand 48 hours, when they will let fall a little sediment, which is a small Precipitation made by the Humidity in the Air, from which you may pour the Cordial Waters off, or crane them, and philtre the last three or four Ounces: this Process carries off the most fiery active Parts, which is perceiv'd when Cordial Waters are drunk.

VI. To render Wood more durable.

Take of the Sand that is used in sawing large Stones, (the finest Part of it) to which add the thickest drying Oil, spread that upon the Wood, which when dry, will be like a Stone,
and

and preserve the Wood a long while; which may be very useful in Fortifications.

VII.

An Oil for Clocks, Watches, and other Machines.

It is generally complained by Watch-makers, that in Cold Weather the Oil congeals in the Works, and obstructs the Motions; to remedy which, proceed thus: Look into a Jar of Sallad Oil in Winter, when it is frozen or congeal'd, and there will be found in the middle of it about a Pint and a half, or a Quart of Oil that is fluid or uncongealed, and which no Cold in this Climate is capable of freezing, which may serve for the purpose for Watch-makers. Again, it is complained by these Artificers, that their Oil generally grows thick or viscid about their Works, and so impedes their Motion; to remedy which, let an Oil be pressed

pressed out of *Bebn Nuts*, which is of a prodigious lasting Nature, and doth not alter, corrupt or spoil in many Years; I kept and observ'd it 14 Years; whereas on the contrary, expressed Oils, such as *Almonds*, and the like, become noxious in 14 Days. When Sallad-Oil is designed to be used, as in the Experiment about the Jar, the Artificers ought to desire Merchants to get their Correspondents to send the Oil over hither unmixed with Salt; for they usually mix Salt with it to make it keep, which Salt by its acrimonious Parts corrodes their Machines, and does them Injury that way.

VIII.

*To clean Fire-Arms in Arsenals, &c.
without Filing.*

Take Scales of Iron one pound,
Blood-stone four Ounces and one
Drachm, Emery eight Ounces, two
Drachms, fine Flower four Ounces one
S Drachm ;

Drachm; reduce all to a fine powder, then make a Jelly of Isinglass in Water, with which beat the Ingredients up to a Paste in an Iron Mortar, and therewith make a kind of Cakes, by putting them into Moulds of Tin or Wood, half an Inch deep, two Inches wide, and three Inches long, and let them dry in the Shade. With this you clean Fire-Arms or any Iron Utensils; which may be polished with the following, *viz.* Take Oil half a Pound, into which thrust a red-hot Iron, which in some measure breaks its Texture, and renders it not so greasy as before; to this put half a Pound of black Lead, and half a Pound of white. If the Arms are design'd to be laid up in an Arsenal, they may be preserv'd in this manner, *viz.* Take Flowers of Zink four Ounces, Linseed Oil one Pound, which boil together till the Flowers are dissolved, which must be spread upon the Arms, and let dry.

dry. The Flowers of Zink are made in this Manner, *viz.* The Zink must be put into a Crucible, and surrounded by a pretty strong Charcoal Fire, when a mealy Substance will arise to the uppermost part, which must be taken off with a Spoon: This was communicated to me by a Master of the Mines in *Germany*.

IX. *Experiments and Thoughts on Ways to render Sea-water drinkable, for the Use of Ships.*

This Matter has employ'd many abler Chymicus's than myself; particularly the late renown'd Professor *Stabl*, first Physician to the present King of *Prussia*, with whom I exchanged many Letters on this Subject: It was that learned Man's Opinion, that it is possible to render Sea-water drinkable in a Chymical Laboratory; but not in a Ship, which is almost in perpetual Motion: He also gave it as his Opinion that

that Sea-water would not be wholesome for Men to drink for a Continuance, let it be got rid of its Salt by whatever means we could; however it might serve on an Emergency, which is what we intend, and no more.

The Quantity of Salt in Sea-water is about one Pound in thirty Pounds near our Shore; and near the *Dutch* about one in forty; which is not enough to hinder it from putrefying: for I once kept Sea-water in a Stone Jug three Years, when being open'd in a Room of about 2000 Cubical Feet, there was such a prodigious stench, that I and others were obliged to fly the Place. I have made Sea-water to pass thro' great numbers of Absorbent Bodies or Ingredients in properly contriv'd Glasses, to see if luckily the Salt by its acid Part would lay hold thereon, and stay behind, in which Attempts it succeeds at first with some;

some; but soon after the Water runs through Salt as it goes on.

In other Experiments I have added all the *Species* of Acids, as Vegetable, Mineral, and what I will call metallic Acids, such as Butter of Antimony, and Oil of Vitriol, the first of which contains the Regulus of Antimony, and the last Iron in a fluid state; for the Mars of the green Vitriol comes over in Distillation in the state of a Gas; these, I say, I added to increase the Acrimony of the Salt-water, that it might take hold on the different absorbent Bodies I made it run thro', but in vain. I also try'd divers Ways of Precipitation, which indeed would fling down the Salt, but added somewhat as noxious to it, which made the Remedy as bad as the Disease.

If Sea-water be put into a Stone straining Cistern used in some Taverns, the first Pint that runs thro' will be like pure Water, having no
Taste

Taste of Salt; but the next Pint that follows will be as salt as usual.

The Remedy then which we propose is no Secret to Virtuoso's; yet seems not much known to Sea-faring Gentlemen, which is by distilling the Salt-Water, when the Salt must remain behind; and to the distill'd Water we may add a few Grains of Salt, according to the Quantity, or a little Sugar, wherby to give it a Taste; for without doing so, it has but a very indifferent one, or rather none. The same Copper that boils their Pease in, &c. might do, adding thereto a Still-head and Worm-tub, which might be slung in the Ship, because of it's motion; and for which purpose a little addition of Fuel might be carried: for when I have talked of this Practice to some Captains, they all answered me, we may as well stow Casks of Water, as Fuel; but we do not talk of any thing but as on an Emergency, for which this
me-

method would certainly serve. I had fully purposed to carry my Enquiries further about rendering Sea-Water drinkable, but on learning that great Physician and Chymist's opinion, Professor *Stabl*, that he could not advise its use for any time, I forbore my Searches, contenting myself to advise Distillation on a necessity, and communicating what I had done to save others the trouble of doing the same.

X.

The Preservation of Waters for drinking in Ships.

If Waters are corrupted or putrefied, it must proceed from an admixture of animal, or vegetable Bodies, to avoid which must be our Business; wherefore if River-water be designed to be carried to Sea, it should be chose, if possible, the furthest from a Town, &c. that may be, that it may be the purest from these
Sub-

Substances ; and which should be kept in Stone Jugs, or Vessels of a large Size made of that same Earth, which are a kind of Vitrification or a Degree towards Glass ; for if the Water be put into Wood-Vessels, they continually furnish to it matter for Putrefaction. But if this method be thought too troublesome in Ships, the Tubs must be used, and to every forty Gallons of Water let there be put an Ounce of true Spirit of Vitriol ; I say true, because the Spirit of Vitriol usually to be met with, is only Oil of Vitriol mix'd with Water, which Oil I would not advise to be used, because it is a more Metallic Acid than the Spirit, which is the more phlegmatic or lighter part that comes up in Distillation : If the Oil is ever used, a Third of the Weight of the Spirit does, that is, one Ounce does for three ; which Thing to those unacquainted with Physic will sound strange, but to Physi-

Physicians not. This Spirit, or Oil will greatly resist Putrefaction, and will preserve the Water much longer than usual, and will be very proper for the Seamen in hot Countries, by hindering a too great Perspiration; and in which Thought I had the Concurrence of one of the first Physicians and Chymists in the World. It is to be supposed there are not many consumptive Men in a Ship, otherwise it would be proper to acquaint them that Mineral Acids, or indeed others, are not good for them.

If Spring-Water be had from Gravelly Grounds, and carried to Sea, it will keep a long while without the aforesaid Acids; but if a little of them be added, it will not putrefy in haste. Holes ought to be bored in the Corks that stop the Vessels, to suffer a free Ingress of Air from the Atmosphere, otherwise the very included Air itself will pu-

T

trefy

trefy and stink. If Water is already putrefy'd, Distilling cures it. Before I quit this Business, I would say somewhat concerning a Phænomenon that has puzzled some, *viz.* That of the Water's taking Flame sometimes on opening a Cask near a Candle; which must proceed from this, that those Casks had in them Beer before the Water was put in, and which not being wash'd, there remain'd the Grounds or Sediment of it, which fermenting, produced the vinous Spirit that took Flame as before said; for Water consider'd as Water cou'd never do it.

X.

For the Preservation of Meat some Time without Salt.

It's done by wetting a Napkin well in Vinegar, and wringing it out, in which the Meat must be wrapt; by which means it will be kept a Fortnight or longer in hot Weather.

XL

XI.

Liquors grown sour, as Wines, Beers, Ales, Cyder, &c. will be render'd drinkable, or have that Sourness taken off by putting into the Liquors Oyſter-Shells found on the Sea-shore, and grown white, and which are to had at the Druggiſt's; which muſt be only broke into Pieces as broad as a Shilling or Six-pence, and not powder'd, which if they are, the leaſt Motion of the Liquors raiſes the Particles, and ſo they make them look troubled. Chalk, or other Abſorbents call'd teſtaceous, will take off this Sourneſs too, but they leave a diſagreeable Taſte behind.

XII.

Touching true and laſting Japan.

The following Proceſs was communicated to me by the Phyſician of his preſent Maſteſty King Sta-

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niflaus,

nistlaus, which I have not try'd, *viz.* Take Umber, Litharge of Silver, Red Lead, of each four Ounces, powder them and pour thereon three Pounds of Linseed Oil, and let it boil, without stirring the Ingredients with any Thing; when it is boil'd and grown cold, pour the Oil off from the Powders into another Vessel: Take of this one Pound and a half, Oil of Turpentine two Pounds, or three Pounds, White Amber finely powder'd one Pound, Boil'd Turpentine one Ounce, mix according to Art for Use: This the said Gentleman averr'd would withstand hot Water, or other Tryals.

XIII.

Insects in Books that destroy the Paper.

I have endeavour'd by many Experiments to keep these Animals out of the Books by Scents disagreeable to them, of which Camphire is known

known to be one of the best ; however, I found it necessary to go further ; the following Machine destroys all Animal Life whatsoever ; neither can any Sperm or Eggs come to Maturity after having been put therein, *viz.* Let a Brick-work be raised in the Nature of a Furnace, fix therein a Copper-Kettle or Vessel, which fill two Parts in three with Water ; have also another Copper Vessel with a flat Bottom, so as to stand with its Bottom immersed two or three Inches in the Water ; let there also be made another large Copper-Vessel, like the Head of a Still, but without a Neck, which join to the last mention'd Vessel, wherein the Books must lie upon several Foldings of Paper, to hinder them from touching the Metal ; when the two Vessels being luted, give a Fire underneath in the Furnace, which will heat the Water, and the Water will heat the second

cond Vessel, and the Vessel will heat or rarify the Air, so as to destroy all Life. If a strong Fume of Sulphur were made in a Library, it would also destroy these Animals; for if the Fume be strong enough, no Animal Life in the World can suffer it.

XIV.

Distillers often receive great Mischiefs by Fire from the blowing off the Still-head, to remedy which do as follows, *viz.* Let a Kind of Trough or Receptacle be made of Tin or Copper, which may be fix'd about the Head of the Alembic, and so as not to hinder the joining of the Head to the Still, which Trough must have a Pipe pointing off from the back Part of the Furnace, distant from the Fire-place, to which must be join'd a Receiver; so that if the Spirits boil over the Mouth of the Alembic, they will run into the Trough, and so down
by

by the Pipe, and not come near the Fire; whereas without the Use of this Machine they always run down the surface of the Brick-work to the Fire-place, and there take Flame, which is propagated upwards to the main Quantity of Spirits in the Still, and the whole takes Fire.

XV.

To guard against Mons. Dupre's ill Practice of opening all Letters, Envelopes, or all seal'd Things whatsoever.

This Man could imitate all Seals and Coats of Arms in an exquisite Manner. He opened Seals by a contracted Steam of hot Water; and the Impressions he took off by an Amalgama of Mercury and Silver; or by striking upon the Seal with a Hammer, upon which a Bullet is first laid, and by other Methods. I must own it's a difficult Work to contrive

contrive a Cement or Plaftic Compound that will withftand the Steams of hot Water ; for it loofeneth all the things a Man can think of : but as I was defired by a noble Perfon to provide againft *Dupre's* mal-practice, I worked hard for a long while, trying all the fticking things I cou'd think of, but in vain. However, ftill profecuting the Search, I at laft hit upon the point, which is this, *viz.* Let dry Garden-Beans be put into a Brals-Mortar, and fome ftrokes be given them with a Peftle, when the Shells will fly off, which feparate from the Beans, and which reduce to a fine Powder, and pafs them through a Lawn Sieve, then return the powder into the Mortar, rubbing it till it becomes an extream fine flour ; then let the White of an Egg be beat out with a whisk, as is done for clarifying Syrups, a little of which muft be mixt with fome of the flour, to make it a moift Pafte, which fpread upon the Sealing-place
of

of the Letter as big as a Shilling, or the usual bigness of a Seal; then close the two Papers, as is usual in Sealing, and hold the part close to a Coffee or Tea-pot, or any other Vessel having in it hot water, which will harden the Cement, so that it will never be opened by any means whatsoever, without tearing. The way to guard against taking off Impressions, Coats of Arms, &c. is by smoaking the Seal by a Candle, &c. which being known to many, I would not insert it here: When the Letter is made fast by the Cement, Wax and any Seal may Cover the same place.

XVI.

Experiments to destroy Bugs in Houses.

This matter has employed some ingenious Men, for I met with a Learned Professor of Physick and Chymistry who had been Labouring in vain on the Work seven Years, and

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who told me he also found *Millepedæ* very hard to suffocate, which was his Methods, or Attempts to destroy them by: This Gentleman also acquainted me that if Sugar be placed thirty Feet from the Place where the Bugs are, they will run to it; where also if a Nest of Ants be laid, the Ants will destroy all the Bugs; so that if those Creatures were not troublesome Companions themselves, they would be a Cure 'against the Bugs. As to all the pretended Remedies or Cures against these Vermin offered the Publick daily, I perswade myself they are nothing but Frauds: I let one of those Proposers do a Bed of mine, when securing a little of his Liquor, and examining it, I found it to be Yellow Arsenick, and Oil of Turpentine, which if he cou'd perswade the Bug to eat, wou'd do; but I know he will march over that safely enough. The next famous Remedy that People spent
 their

their Money in, was Oil of Turpentine, Camphire, and Spirit of Wine, equally to be laugh'd at.

This troublesome Creature, we know, bites some People, and others he leaves untouched; but we have no Philosophy to explain to us why he doth so; however we see from thence, that he has his likes and dislikes as well as we. I endeavoured by a vast number of Tryals to find what might be so disagreeable to him, as to cause him to keep from the Bed, which I did, by powdering most of the Things found in the Druggist's-Shop that have any Smell, making a Ring with the Powder, and putting the Bug therein; when I found that one of the Things he dislikes most is *Russia-Castor*; however, tho' this be laid about the Bed, he will not quit the Place.

I then tryed Rolls of Tobacco, the freshest to be had; Pellitory of the Wall, Rue, Wormwood, several

ral Chymical Oils ; which Mr. *Bradley*, Profeflor of Botany at *Cambridge*, fpeaks of, but all in vain.

I then tryed to deftroy him by Fumes, which I made firft of Flowers of Sulphur, Filings of Steel, and Oil of Vitriol, fetting them on a portable Iron Furnace with lighted Charcoal under it. Likewise Fumes of Acid Spirits ; Fumes of Mercury ; Fumes of all the Species of Arfenick, all which he flood boldly ; when all other Creatures I tryed were killed by fome of thofe Fumes, except the Ant, which is likewise a fturdy Creature.

At laft I tryed the following, which no Animal Life can fubfift under, *viz.* Let Matches of Sticks be made by dipping them in Common Sulphur, fo that they may have adhering to them four Pounds of it, which will do for fome Rooms ; but if the Room be of the bignefs of 2000 Cubical Feet, it requires
about

about six Pounds, which Matches must be set upright in Earth put into a large Earthen Pot, such as Trees are planted in; and set on fire in the Room where the Bugs are troublesome, stopping the Chimney, by hanging the Blankets before it, and likewise causing Blankets to be hung against the Cracks of the Door, in which a little Hole must be made, and cover'd afterwards with Glass, that may serve for a Peep-Hole to see no Mischief ensues.

This Sulphur while burning will give a prodigiously strong Funck, and such as will kill all Creatures in the Universe. The Work might be begun in the Morning, and by next Day the Fume will be subsided, and the Door may be opened. It would be proper to make the Fume when hot Weather comes on, and they begin to bite; and again in *September*. All Gold and Silver Laces, Pictures, or Cloaths of fine Colours must be
taken

taken out of the Room, which with other Circumstances, renders it a troublesome Work ; however, I am persuaded by many Years Observations that there is no other way to help us but this Method, and the two following, *viz.* Let all Things that may be wet without damage to them, be put into the great Worm-Tub of a Distiller, or Chymist, when he has distilled so long that the Water in the said Tub is hot, by which the Bugs are killed, and their Eggs rendered abortive ; for no Animal Life can subsist in hot Water ; and the Things that are improper to wet may be put into such a Machine as is described herein for destroying Insects in Books, where also the Wood-work, or those Parts we have just mentioned to be put into the Still-Tub, may be put likewise : for which purpose the Machine must be made big enough, wherein the Air becomes so hot as
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to destroy Life, and yet would not damage Laces of Gold and Silver, &c.

XVII.

The Proceſs by which Longueville imitated Gold, for which the Dutch boiled him alive in Oil, was this :

Take Copper four Ounces, calcine it with common Sulphur till it comes to an Ounce and Quarter, which muſt be done by ſeveral red-hot makings, and when it becomes green, it is enough. Then take this calcined Copper, and an Ounce of Silver, and half an Ounce of Borax, melt them very well together, then caſt it out of the Crucible, and beat off the Droſs, and melt it again with as much Borax ; caſt it out again, and beat off the Droſs as before, repeating this Work a third Time, then melt again by itſelf in a ſtrong Fire, adding thereto two Ounces

Ounces of Gold; let it stand a while in Flux, add some Borax to it, and keep it there an Hour, then cast it out into Ingots, repeating the Fluxing till the Borax remains white; then melt this Artificial Gold alone, and cast it into Grains of Nitre, till it has got a good large Skin on the top of it, then cast it into Ingots, and it is done.

So far the Receipt as communicated to me by a *German* Professor of an University.

What Faults this Man committed in his Time I know not, but I regret his Death if it was for Gold-making, for I think this Process far from that; however, be it as it will, a Friend of mine knows a Gentleman who saw *Longueville* cast down an hollow Wooden Thing into a Cauldron of boiling Oil, when he stood so nigh it, that some of the Oil flew on his Clothes.

F I N I S.

